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HORIZONS

January 1985

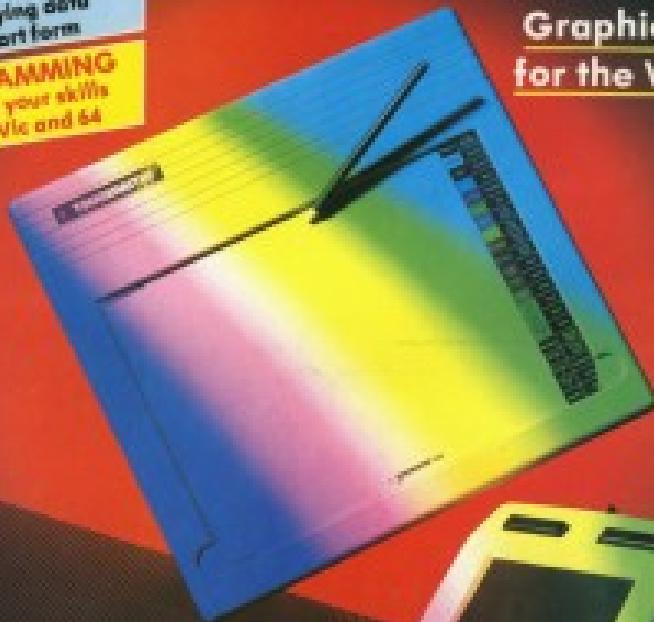
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Submitting articles

Commodore Monitor welcomes reader's contributions — either articles or program listings. Articles should be typed, double-spaced, with a wide margin. Programs should, wherever possible, be printed out on plain white paper, accompanied by a cassette. We cannot guarantee to return every article or program submitted, so please keep a copy. If you want to have your program returned you must include an S.A.E.

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STAR-GATE



Many thanks Jeff Milner presents his on-line SYMULCD

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Concluding our short series based on David Lawrence's book

Introducing Commodore

John Cochrane has been exploring the jungle through his modem

Relocating the machine code

MC Hair presents some useful programming routines

Software File

Our latest ever collection of games and utilities for Vic and 64

BAT Competition

No, it's not a robot — it's an infra-red joystick you can win

Answers

More books on the Vic and 64 put through the shredder

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Jack Cohen very kindly answers your burning questions

Beyond Competition

Win Fox Martin, Payton, or money off Beyond games

EDITORIAL

NOW MACHINES ALWAYS make their manufacturers nervous. A company may not fail just because its new model is a spectacular flop, but its image will be damaged and it will have to write off an enormous amount of effort, research and capital. A succession of costly flops and the company will fold.

The rewards of launching a successful machine, however, are self-evident. Quite apart from the immediate financial rewards, there are numerous advantages in establishing a wide user base and fostering brand awareness. A successful model can be a licence to print money, but it comes closer.

The C16 and the Plus/4 have only been on the market for a few months, so it is perhaps too premature to make any final judgements. Nevertheless, it is possible to draw some conclusions now.

Neither machine is a smash-hit, though the C16 appears to be selling quite nicely. The Plus/4, for all its built-in software, appears to be failing an money ground. At the rate of 10,000 per month, the releases are outstripping the sales.

This does not mean that either machine is doomed to an early wrap-up. The Commodore 64 was not an instant success when it was first launched in the UK. It only took off when Commodore reduced its price.

It is interesting to note that Commodore appears to be considering the idea of constructing an adaptor which would make the Plus/4 compatible with the 64. This would allow it to run software written for the 64, thus making it instantly more attractive to both software companies and users.

However, with 16 and 32 bit machines already hovering on the horizon, neither the C16 nor the Plus/4 are likely to have extended selling lives. If these machines are going to be successful, they will have to take off soon. Judgement may be suspended for the moment, but the day of reckoning is not that far off.



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LETTERS

PAGE

Terminal tips

HERE ARE a few more useful screen codes for anyone who has Terminal's Super Gridder game.

When the game has loaded press **RUN/STOP-RESTORE** then type:

SDTTERM — makes the grid invisible.

SDTINFIN — to give infinite lives.

S. Darr
Mansfield
Cheshire

Whilst on the subject of grids, the listing for Steve Law's Rat Shock in the same issue uses non-standard graphic characters. If you're having problems, replace the solid square, short dash, slanted and diamond with appropriate cursor symbols and the other graphics with colour control codes. You should then be able to shock as many rats as you like without difficulty.

CSR UP/CURSOR UP

CSR DOWN/CURSOR DOWN

CSR LEFT/CURSOR LEFT

CSR RIGHT/CURSOR RIGHT

HOME/CURSOR HOME

COLOURS

BLK	■	044	+
WHI	■	255	-
RED	■	252	+
CYAN	+	253	+
GRN	+	253	-
GRN	+	253	+
BLU	+	242	+
BLU	+	242	-

Vic 20 forever

I HAVE bought every issue of your magazine since it started last year. I own a Vic 20 and have been very disappointed with November's issue since there is hardly anything for the Vic; there was only one game to type in, and that needed the Super Expander

software review for the Vic were also scarce. I've always liked your magazine until now, so please have more for the Vic.

John Albers

Hornbeam

EVEN THOUGH the Vic has now been discontinued, meaning there is a demand for articles and a supply of new software from manufacturers, we will continue to support it, along with the 3D, C16 and Plus4. You'll notice that there are several new Vic games reviewed in the Self-Hits section, and we'll continue to publish readers' listings as long as you continue sending them in.

Vic 20 —

never

WITH THE demise of the Vic 20 there may be a number of your readers who are considering the 3D as a replacement. Let me sound a note of caution.

My original configuration was the Vic 20, 1541 printer, Datasette and 1540 disk drive. This config with my supplier I was assured they were all compatible with the 3D. The supplier gave me a noted "UPGRADE" promised to me with the 1540 which was confirmed by CBM Cards. Needless to say it did not work. Further enquiry to CBM gave me a sample of POKEs which appeared to work until I attempted to load a database program. Yet another supplier gave me the information that the POKEs

would not work if there were any LOAD/SAVES in the programs, and the only way to ensure success was to change a chip in the 1540.

I loaded the 64 Tapex Computing magazine cassette from the Datasette and got a 100% LOAD/FIRST response. A friend loaned me his C2N and everything was perfect. This means I've spent £21.45 for a chip and £3.95 for a C2N.

So, when a supplier tells you that peripherals are 100% compatible — they're not. C. J. Pearce

Fareham

Hants

LETT'S JUST clear a few points up. There's no functional difference between the Datasette and the C2N, so the problems with the 3D, BASIC and user programs probably caused by misaligned heads or whatever. The 1540 and 1541 are, however, different, and the modification mentioned would be necessary to use the 1540 satisfactorily with the 3D.

The moral of the tale is that suppliers can be more interested in shifting products than in checking their facts. Always see the product working before handing over the cash.

This is the chance to air your views — send your tips, complaints and compliments to

Lorraine Page,
Commodore Horizons,
13-15 Little Manser
Street, London
WC2B 3EL



Tynesoft promises C16 games

SOFTWARE for the new Commodore 16 and Plus/4, impossible to obtain at the time of writing, may soon be available from at least one major software company. Tynesoft has plans for a Christmas edition of a master pack of four C16 games, Shoots, Clowns, Monkeys and Kloppit, at £4.99.

The four games are variants of well-known arcade games, and have been produced in co-operation with Commodore UK.

Tynesoft spokesman Colin Craymer said: "The C16 is doing well locally, and we have plans for several more games. Despite the small memory we've been able to design North Sea Oil Rig Disaster, which has eight scrolling screens, and we're now working on Olympia". Oil Rig Disaster features several rigs

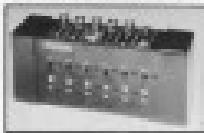
connected by pipelines, and a helicopter which has to avoid flames to land where who can repair the damaged pipelines. Olympia is a variation of the popular Olympic Games theme.

Tynesoft's latest releases for the 64 include Superfire, a budget database on cassette at £9.99 or disk at £12.99. Utility programs for the Plus/4 are also on the way.

For more details contact Tynesoft, Address Industrial Estate, Maylands Avenue, Tyne & Wear, NE14 1AA.

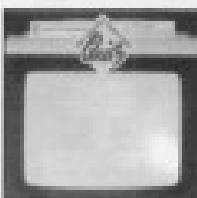
Ross in control

ROSS ELECTRONICS' RF-170 television control centre enables you to interconnect a TV, computer, videotape recorder, video game, cable TV or additional VTR, dubbing and monitoring units.



Without complicated wiring. Measuring 285 x 90 x 80 mm, the RF-170 has one phono input and three coaxial, which may be freely interconnected through a bank of six slide switches. The unit costs around £39 and is available from specialist audiovisual dealers or from Ross Electronics, 49-53 Parsons Road, London NW1 3QB.

Commodore quizzes schools



Commodore 64 systems. For three months, if at the end of the period the school wants to keep the equipment, Commodore will add £1 to every £1 the school raises in payment.

For further details of the idea, contact Mrs Sharon Abrahams at The British Computer Society, 13 Mansfield Street, London W1M 0BP, 01-587 0471.

Have a Banana

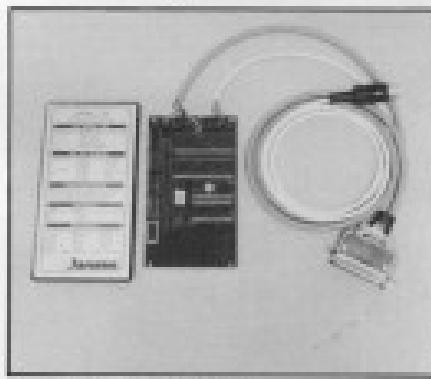


THE ODDLY-NAMED Banana Interface enables the 64 or Vic 20 to control DC motors, stepper motors and solenoids. It has 14 four millimetre

banana sockets on its panel, including eight relay outputs, eight 12 volt logic signal outputs, and eight inputs. Special attention has been paid to regulation of construction and safety of use, and the Banana is recommended for use in educational establishments (and, presumably, home).

Software and hardware for specific experimental uses is presented, and the Banana is available direct from the manufacturers, Computer Castle Associates on 0732-584250 for more details.

West German printer link



Jansen-Elektronik's PC/XT/AT interface

JANSEN-ELEKTRONIK has announced an intelligent multi-function Centronics printer interface for Commodore 64 devices such as the Super PET-80 or Star.

PRINT-64 can dump large pictures in shades of grey, and can copy with user-defined graphics and all Commodore PET graphics. The interface comes with a monitor program on disk, though this is not necessary for normal operation. Fourteen secondary addresses for print commands are also supported.

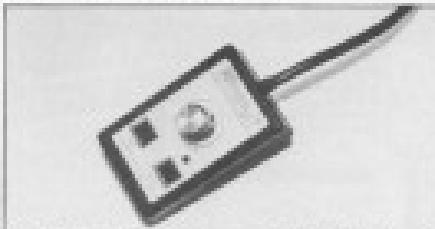
The interface's price is to be held at £68.95 until January 1st 1985.

Contact Jansen-Elektronik, Unter Olbach 1, 3880 Lengede N, West Germany.

Slomo cuts the pace of micros

CAMBRIDGE COMPUTING's Slomo is now available for the 64 or Vic 20. This unique device consists of a cartridge port connector with a short length of cable, connected to a control box with two buttons and a lead. The internal circuitry introduces an unmaskable interrupt into the computer's operating system, with the result that the action of any program, in Basic or machine code, can be slowed down to 100ms.

Apart from making it easier to debug difficult arcade games, Cambridge Computing suggest that software houses



might find the device useful in the production of screen shots. The Slomo is guaranteed not to damage the computer, and can be left connected at all times.

Cost is £14.95, through road agents or direct from Cambridge Computing, 61 Dinton Walk, Cambridge CB5 8QZ, 0223-214411.

Pulling the plug on mains noise

COMPUTER USERS plagued by mains surge causing computer crashes, when the manufacturer itself will be pleased to know that two new products aim to solve the problem.

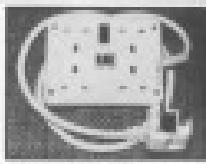
The first, from Power International, is The Plug, costing £17.95, it's a 15 amp device which is simply fitted to your

computer mains cable, and goes into a conventional wall socket. The internal circuitry consists of a transistor component and an EMI filter, which effectively eliminates "noise" in the power supply. Contact Power International, 25, Standard Street Road, Farnborough, GU14 7SP, 081-567115.

For users with more



£17.95 The Plug



Bayrayn's Power Bloc

equipment to protect, the Power Bloc from Bayrayn Electronics is a four-socket unit with a 10A fuse spike suppression rating. It features a three-prong extension cable and AEC plastic case, and costs around £80. Contact Bayrayn Electronics, 12 King Edward Street, Shirebrook, Mansfield, 0623-548129 for more details.

Spectrum emulator imminent

WHITBY COMPUTERS' Z80 Spectrum emulator software, just announced at £14.95, is designed to allow Sinclair Spectrum Basic programs to run on the Commodore 64.

Several months ago the company's claim to have produced a Spectrum emulator which could cope with machine code proved to be without foundation. Whity Computers, a company best known for variously developed Basic extension packages for the 64, has now released the Spectrum package, which adds the commands from Sinclair Basic to the 64. Whity claims that most Spectrum listings can now be typed into the 64, while the use of 64 Basic is unaffected.

Whity suggests the Simulator as an ideal method for Spectrum owners who wish to upgrade to the 64 to retain Basic programs, at the same time adding many of the functions of Sinclair's Z80 Interface 1, which has an RS232C port, and giving the user the use of the 64's quality keyboard, disk handling and serial port facilities.

We'll review the Whity Computers ZX Spectrum Simulator as soon as possible. Meanwhile contact Whity at T. Clegg Hill Road, Whity, N. Yorks, YO9 1AS.

Printing and plotting on a budget

HAKUBOSTOKU-based Data Fax, distributor of products from Japanese giant Nakata Shokai, has announced the SCP-800 four-colour photocopier, which retails at under £2000.

Apart from handling A4 paper, the SCP-800 has a 100 sheet paper roll option. Printing speed is six or 12 cps depending on character size. Interface options include Centronics eight or parallel, serial, or RS232C with an adapter.

For more information, contact DataFax at Danforth House, Danforth Road, Buntingford, Herts, WD13 8RZ, 0524-460011.

At the same time the Pre-



DataFax's SCP-800

man Robot Plotter, a three-colour device related to the turbie, has been announced. The Plotter consists of an interface unit and a free-moving drawing head connected by a ribbon cable.



Preman's Robot Plotter

At £349, the Plotter is cheaper than many printer/ plotters, and is not limited in the size of paper it can use since it does not have a work surface — it can be operated on an ordinary table. Connection to

the micro is by RS232 interface, and Commodore 64 software is in preparation. Contact Preman Products Ltd, 8 Hanwood Close, Hanwood Way, Woking, Surrey, GU14 8EP, 0803-200001.

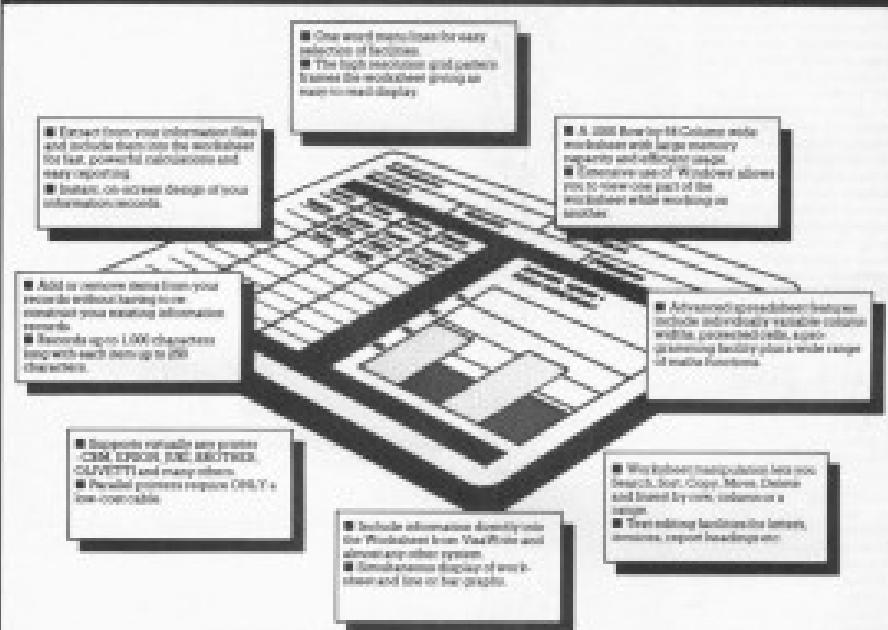
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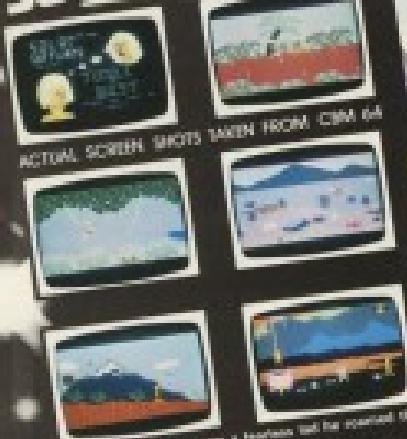


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MONKEY MAGIC

MONKEY MAGIC

SOLAR SOFTWARE

CBM 64

CBM 64

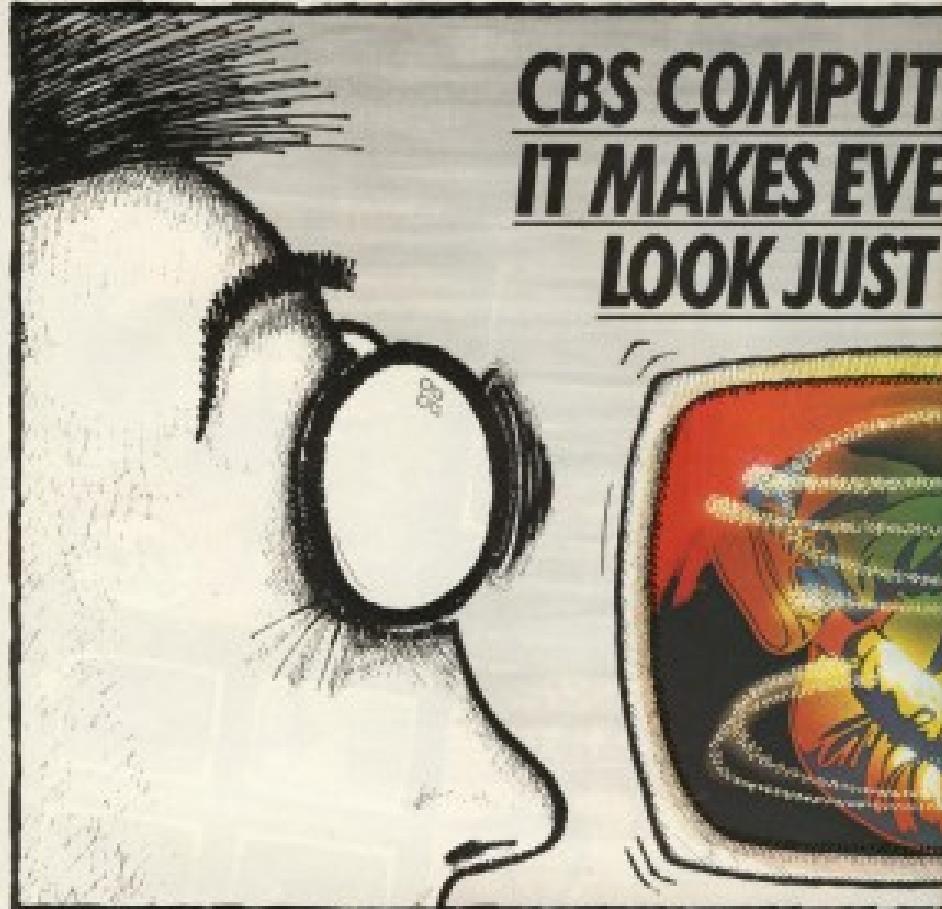
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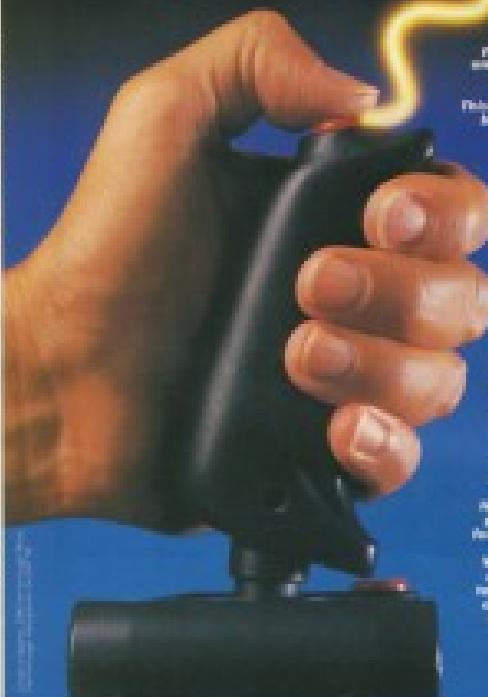
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COUNTDOWN TO
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CH1189

Saving time and trouble with Basic sense

Typing in listings or writing your own programs needn't be a frustrating chore — Sarah Cotton passes on some useful hints

WHEN WRITING your own programs, or entering those from books or magazines you will find yourself repeatedly typing the same Basic keywords. Obviously, if these can be typed in very quickly then a lot of valuable time can be saved. Program 1 should help you to develop this skill.

When you RUN the program you will be asked to type a keyword. Do this, following up with the return key. If you make a mistake then the computer will tell you and give you another chance.

Many of the Basic keywords can be abbreviated as you type in a program, but when it is listed the word will appear in full. A complete list of abbreviations appears in the appendix of your user manual but Table 1 shows a few of the most useful ones. For example, type:

10 PRINT "HELLO"
instead of

10 PRINT "HELLO".

When typing in any program you are very likely to make mistakes or wish to change some of the lines. Re-typing a whole line for one slight alteration can be extremely tedious, but the INS/DEL and cursor keys make things much easier. For example:

10 PRINT#1

Let's say you want to change the 1 to a 2. Use the cursor up key to take the cursor back to the correct row of the screen the line appears on. It should be flashing over the figure 1 of the number 10. Press the cursor right to position it over the 1, press 2 and then RETURN. To check your alteration has been noted use LIST.

Inset 1

Let's go back to our original program, this time changing the 8 to 18. This will mean us 'inserting' an extra character. As before, move the cursor until it is flashing over the 8. Press shift along with INS/DEL and a gap will be created. Follow this by depressing the keys 2 and RETURN.

This alteration can be removed by positioning the cursor over the 8 and pressing INS/DEL. Immediately the 2 will disappear.

This method of editing can also be very useful when many similar lines have to be typed in. See program 2.

Type in the first of these lines in full, remembering to press return. For each successive line move the cursor up and change everything that needs to be altered, including the line number itself. Remember to press return after each line, and use LIST to check all have been entered correctly. □

Program 1

```
10 PRINT"1":REM CLR
20 B=1:FOR C=1 TO 10
30 FOR D=1 TO 10:READ:NEXT D
40 PRINT D; PLEASE TYPE :N:N:REM CR$R DD
50
50 INPUT :A
60 IF A<>"END" THEN PRINT "D"; MISTAKE":GOTO 6
70 REM CR$R DOWN
70 RESTORE:GOTO 10
100 DATA PRINT ,FOR ,INPUT ,GOSUB ,RETURN ,D
D:THEN ,FOR ,NEXT ,RESTORE
```

Program 2

```
10 IF X>Y THEN D=0:PRINT D:END
20 IF X>Y THEN D=1:PRINT D:END
30 IF X>Y THEN D=2:PRINT D:END
40 IF X>Y THEN D=3:PRINT D:END
```

Program 3

```
10 PRINT "HELLO":10 PRINT "GOODBYE":1:GOTO 10
```

Program 4

```
10 FOR T=1 TO 4
20 PRINT "HELLO"
30 NEXT T
```


In entering programs from books or magazines I always find it useful to have a piece of card to put just below the line I'm typing in. As your eyes flicker from the screen to the program listing, it saves them from having to search around the page, and it also helps to avoid mistakes.

Book or magazine programs will probably contain a lot of REM statements. If you are concerned with the structure of the programs or think you might like to make some alterations to it then these should be left in as they are. Otherwise you could save time by just typing the REM's and ignoring the following explanations. It could be dangerous if you get rid of the REM lines completely. For example, if line 100 is REM Make A Noise and elsewhere there is another line saying GOSUB1000, you would get an "Unlabel Statement" error if line 100 was totally removed.

While writing your own programs, it is very helpful to keep a list of variable names and what you are using them for. This will save you having to keep looking back over your program to find the first mention of a certain variable, and working out what it has been assigned to.

The amount of typing you have to do can be reduced by using short variable names — for example, A\$ instead of AAS. Also, if a number or word is to be used several times it is best to hold it in a variable rather than keep typing it out.

Multiple lines are lines containing more than one instruction. For example, see Program 3.

Branching

Each statement is divided by a colon (:). It should be noted that each line can only be 80 characters long. These multiple lines reduce the number of line numbers that must be typed in. Before you start using them here is a brief warning. Consider this line:

10 IF X = Y THEN PRINT "HELLO":
GOTO 100

The computer will only branch off to line 100 if X equals Y. If this is not true the whole line will be ignored.

When writing a program you will often find that parts of it will need to be repeated. This can be achieved in two ways. The first is the PRINT...NEXT loop.

As I have already explained this method of repeating an operation a set number of times in an earlier article, I will not go into any details. Program 4 is a short routine to print a word 4 times in a reminder.

A FOR...NEXT loop only allows you to repeat an operation one line straight after another. A subroutine is a short program in its own right, which can be called by the main program at any time. The lines of a subroutine are generally in the thousands, and it is conventional to begin them with an explanatory REM statement.

The command GOSUB X will send the computer to the subroutine beginning with line number X. The RETURN statement does the opposite, returning the computer to the place where it left off in the main program. See programs 5a and 6.

The subroutine is held in lines 1000 to

Program 2a

```
5 REM PROGRAM FOR VIC-20
10 PRINT"REM CLR
20 INPUT"WHAT IS YOUR NAME"1$"
30 GOSUB1000
35 PRINT#PRINT
40 INPUT"How OLD ARE YOU"1%
50 GOSUB1000
55 END
1000 REM MAKE A NOISE
1010 POKE30828,13
1020 POKE30828,269
1030 FORT=1102520:NEXT
1040 POKE30828,0
1050 RETURN
```

Program 3b

```
5 REM PROGRAM FOR COMMODORE 64
10 PRINT"REM CLR
20 INPUT"WHAT IS YOUR NAME"1$"
30 GOSUB1000
35 PRINT#PRINT
40 INPUT"How OLD ARE YOU"1%
50 GOSUB1000
55 END
1000 REM MAKE A NOISE
1010 POKE54298,13
1020 POKE54271,0
1030 POKE54279,348
1040 POKE54271,221:POKE54272,222
1050 POKE54270,17
1060 FORT=1102520:NEXT
1070 POKE54270,B:POKE54272,B:POKE54270,B
1080 RETURN
```

Program 4

```
10 FORT=105
20 READ NH(T),H(T)
30 PRINT NH(T),H(T)
40 NEXT
100 DATA FRED,123,JACK,358,PETER,674,SUE
NH,100,JANE,728
```

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4 onwards. Each time the user inputs information, the computer is sent to the subroutine by the GOSUB command and works through it. When it reaches the RETURN it goes back to the statement following the GOSUB command.

The END is required in line 60 to stop the computer running line the subroutine. If it is omitted you will get a "Runtime Windows Growth" error because a return has been encountered and no GOSUB command has been issued.

The use of subroutines is essential when writing games programs. The computer needs to constantly branch off from the main program to perform such operations as moving objects, firing and reading timers.

Subroutines can often be used in more than one program so it is useful to keep a record of the most versatile ones for future reference.

Arrays

Earlier I mentioned the use of shorter variable names. There is another way in which variables can save you time. Arrays are lists of variables with the same "base name" which can hold other numbers or letters. An extra number in brackets following the base name allows us to distinguish them. This number is called the SUBSCRIPT.

For example, let's read in 5 names along with their telephone numbers and print them out on the screen (program 4).

The numbers are held in the variables N501 to N505 inclusive, the names in N401 to N405. Without arrays we would have needed 10 separate variables and a longer, more complex program.

So far we have not worried how long the list of variables in an array is. Your computer assumes that any array you mention contains 10 values with subscripts from 0 to 9. It is safer if you need less, and economical if you need more, to add a DIM statement. DIM stands for 'dimension an array'. It should appear at the beginning of your program in the form:

Line number 1000 DIM first name (size of array)

For example, we should add the following line to our telephone number program:

1000 DIM N405, N505

An array can only be dimensioned once in a program. If we wanted our program to run over and over again then we would add the line:

5000 DIM 10

If instead we had added:

5000 DIM 2

then we would have got a "Bad Dim Array" error.

Try program 5. Again we get an error. This occurs because the computer automatically performs a dimension operation in line 10, having not met the array before. This cannot be repeated in line 20.

The idea of an array should make it a lot easier for you to use published programs, and to write your own in an efficient way. We'll look in future articles at more ways of making using the Commodore computers easier and more fun to use ■

Program 7

```
10 PRINT "Hello"
20 END
```

Table 1

COMMAND	ALTERNATIVE
CLOSE	CL shift 0
CONT	C shift 0
DATA	D shift A
END	E shift N
FOR	F shift O
GOSUB	GO shift S
GOTO	G shift O
INPUT	I shift N
LIST	L shift I
REST	R shift E
OPEN	O shift P
POKE	P shift O
PRINT	T
PRINT	P shift R
READ	R shift E
RESTORE	RE shift S
RETURN	RE shift T
STOP	S shift T
FREE	F shift E
TIME	T shift U
STEP	ST shift X
WAIT	W shift A

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Wundaful

Starring role in *Wunda Waller, Interceptor Micros'* new Vic 20 sensible game, is taken by their spherical represent Waller.

Versatile chap that he is, Waller exhibits a strange ability to break free as long as the joystick's flickswitch is pressed. Only when it's released again does gravity take over and he drifts back to earth.

OK, so it's not the sort of social skill that'll guarantee him a place at Elton, but it certainly helps to avoid the trees, volcanoes

and rugged terrain that scroll along during the game. It's also his only defence against the meteors that zoom along impeding the



airspace. Fail to dodge one of these and Waller loses one of his five lives.

of the film, as you supply your bloodthirsty



team, set off on the haunted houses, and try to catch spooks in your ghost trap without

Boogie with a ghoulie

You may or may not have seen the film *Ghostbusters*, but it's a brilliantly scripted and produced comedy supernatural thriller about a team of rats that round up幽鬼 who are claimants up as ghost exterminators, and find themselves the only ones standing between the dreaded demon Paul and the helpless world.

The game retains a lot of the spirit (but not

Quickie brickie

place), the people who brought *Aliens* states to your sitting room, have released a pair of original games for the Unexpanded Vic 20. Bricks is one of them.

You have joystick control of a little brickie who begins each game at the bottom of the playing area.

Bricks rain down from the great boulder in the sky, forming an ever-growing mound that steadily fills the screen. Fail to

avoid this falling masonry and you'll find out what it's like to be just another brick in



the wall. On top of this, you've got to get to the top of the pile and stay there, not say

holy ol' Parenthetical. Charles races around with the party cheering up after the next



what, and it goes more and more ridiculous as time goes on. What with the signs of D's bickering, avoiding the pressies and dodging doctors and journalists, and flying impairs,

Four distinct terrains, each with its own brand of aggression, should keep the player sweating for quite a while. Graphics and sound are superb, with some of the smoothest animation and most polished music you're ever likely to encounter on the Vic.

Surprising messages, responsive control and a sense of fun make this a package worthy of attention.

Program: *Wunda Waller*, Vic 20

Supplier: *Interceptor Micros*

Price: £16.99

Graphics: ★ ★ ★ ★ ★

Sound: ★ ★ ★ ★ ★

Gameplay: ★ ★ ★ ★ ★

Acknowledging yourself with your regular leather backpacks.

The most enjoyable aspect of the game is the unashamed musical score, based on Ray Parker Junior's hit song *Chestnut Mountain*, and the ultimate speech which is certainly the most impressive yet produced on the Vic. This game is going to be the Christmas hit — go out and buy it.

Program: *Ghostbusters*, Vic 20

Supplier: *Actionstar*

Price: £19.99

Graphics: ★ ★ ★ ★ ★

Sound: ★ ★ ★ ★ ★

Gameplay: ★ ★ ★ ★ ★

when you can only hop up one brick at a time.

By dashing about in this fashion, and using the limited facility you have for rearranging the piles, it's possible to scrounge up to the next level. Unfortunately, I don't think that *Paulie*, despite being the originalists, have produced the definitive version of what is really a very good game play idea. Good class two though.

Program: *Bricks*, Vic 20

Supplier: *Palace Software*

Price: £14.99

Graphics: ★ ★ ★ ★ ★

Sound: ★ ★ ★ ★ ★

Gameplay: ★ ★ ★ ★ ★

It's all for the win! A good soundtrack too, composed of music versions of God Bless the Prince of Wales and other mirthless farewells.

Spruce graphics throughout, reasonable sound effects and a unique Aggravation Factor scoring method make *D's Baby* more than just an exercise in bad taste — though even at that level it's well worth looking out for. Not just to play while the Queen's Speech is on the telly on Christmas Day, though.

Program: *D's Baby*, Vic 20

Supplier: *Bad Taste Software*

Price: £15.99

Graphics: ★ ★ ★ ★ ★

Sound: ★ ★ ★ ★ ★

Gameplay: ★ ★ ★ ★ ★

Di now, play later

A monumental exercise in bad taste, which has gained a good deal of press coverage from the gutter press (I mean the Daily Star, not Computer User), *D's Baby* is actually quite good fun for those with a strong stomach and a good sense of humor.

There are five scenes, in which you have to help the Rascal couple conceive another in their long series of babies. In the first, The

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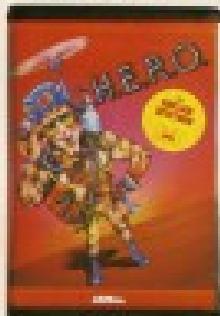
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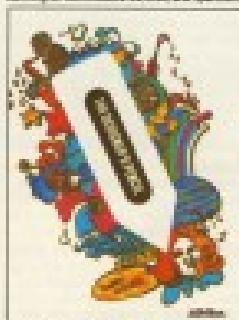
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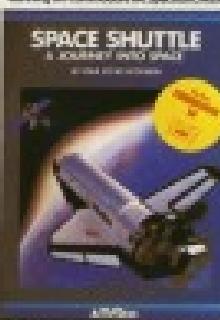


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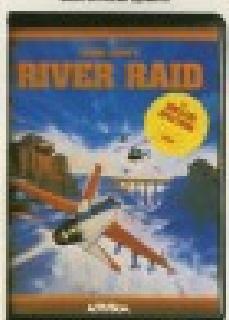
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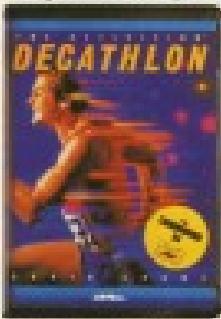
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Platforming miracles

Software Projects has given admirable support to the Vic 20 and the latest offering, *The Perils of Willy*, deserves to do well.

It's a version of *Maze Mania* (an official one at that) with 20 screens full of the giders, walls and other obstacles we've come to expect from this sort of game.

Animated opposition in the form of wild

Martial artist

Notching the good life of colonial Newtunes is not the circulation point. Bruce Lee, now not so much a person, more a trademark, has been dragged back from his earthly grave to feature in this martial arts knock-about from the US company Datsoft. It's rather a good game, as the little yellow figure of Lee scurries up and down the walls of a Chinese fortress,

Kill him, my robots!

One of the first from CBS Electronics is their tie-up-with-acid tank software website. Here, *Impossible Mission* is a remarkable cartoon-like multi-screen arcade epic in which you play a secret agent.

There are 32 rooms with 90 different robots out to squash you as you try to penetrate the computer-controlled hideaway of the loony scientist Drax, who is holding the world hostage with the threat of nuclear

death, press and machine oscillators disrupt every attempt to move up to the next level.



As with all "maze" alternatives, success

depends on running, jumping and standing still at all the right times. Master this technique and the early levels should pose no problem. Unlike other mazes, the Vic 20 is not suited for独創 when it comes to maze games, so this is a welcome bit of panache. If you've got a 386, a joystick and a few quid to spare, this one's worth a second look.

Program: *The Perils of Willy*, Vic 20 - £16.
Supplier: Software Projects
Price: £16.95
Graphics: ★ ★ ★ ★ ★ ★ ★ ★
Sound: ★ ★ ★ ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★ ★



a kill-switching mission which can give you a reprieve. The animation of the secret agent is remarkable, and the software



switches almost as good as that on *Ghostbusters*. Especially a blood-splashing shield

entitles the activation bring, offer them the hand of friendship.

Yay, you've passed it. It's another



chance to kill now — lots questions later. Pleasant after plentiful of poor decisions

and cheap, and the Chinese "ants", a gigantic ant who runs through the air and tries to kick you in the jugular. Lee responds with joystick-controlled chops, kicks and leaps, and a good time is had by all. It's the working out which lingers upon the doors to the next of the 20 chapters, and I have yet to meet the ultimate perk, the ancient Wizard.

Overall, rather good.
Program: Bruce Lee, 32
Supplier: U.S. Gold
Price: £9.95
Graphics: ★ ★ ★ ★ ★ ★ ★ ★
Sound: ★ ★ ★ ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★ ★

when he falls down a shaft).

The players of the puzzle which will enable you to open the master control room, and get at the useful Drax, are found by investigating various computer terminals and lots of furniture. Secret codes help you to freeze the malevolent robots or rearrange the platforms, which will be crucial in some sections.

Overall, a wonderful game, and hopefully the first in a long series from Epyx/CBS.
Program: *Impossible Mission*, 32
Supplier: U.S. Gold
Price: £14.95 (disk only)
Graphics: ★ ★ ★ ★ ★ ★ ★ ★
Sound: ★ ★ ★ ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★ ★

travelers bound to blow in a cascade of explosion, colour and chaos.

Robot destruction of think carefully well and although Galaxian is yet another version of Galaxian it's still very playable.

To be frank, I've seen better from Konami but since most Amiga games look so very much like the next it's hard to quantify exactly what's making them stand out.

If you're the discerning, visual type this is probably worth a place in your collection.
Program: Galaxian, Vic 20

Supplier: Konami
Price: £7.95
Graphics: ★ ★ ★
Sound: ★ ★ ★ ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★ ★

To boldly go where no man . . .

Here's a subtle little offering for the basic Vic 20 from Konami. Let's call this the alien sweepstakes from another solar system to say nothing. Now, with all the digital, binary, tact and global understanding that

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IDEAL IDEAL is an Internet Driven Extensible Animation language. Once you have installed IDEAL's ActiveX editor to help set up IDEAL commands and put a little IDEAL in, you will be ready to produce some really cool games. Even if you're not interested in game development, however, IDEAL's extensibility makes it a great tool for creating animated, localized, and synchronized interactivity integrated with web pages and video. Applications are possible both on screen and off. Applications and sprite windows, sprites can even switch to external general programs, so think first about how you want to use the basic idea of an active document to its fullest. Success can result from graphical experiments such as CD-ROMs, CD-Audio and SGI and fully functional, and there are some unique collision-detection facilities.

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MARKETING AND PORTABILITY Although White Lightning can run FORTH in its host language, programs can be written in combination of BASIC, COBOL, C, and assembly language. What's more, programs written in FORTH/IDEAL will be highly portable because the Spectrum and Imagination's user development for other popular machines. When it comes to increasing your computer's processing power, there's no limit to what you can do.

SPRITE DESIGN "Sprite Lighting" software allows you to make your own Sprites from scratch, they only cost you now less to design your own Sprites from scratch, a collection compatible with 16-bit DOS standard characters and graphics from Asteroids, Pac-Man, Assault Course, Defender, Space Invaders, City Bomber, laser Lander, Frogger, Contra, Double Daring and many more. These characters can today as well as can be redesigned. And Sprites can be saved in various formats allowing creators before being finally loaded onto their programs.



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Flights of fancy

Flight simulators for the expanded Vic 20 are pretty scarce, but this has got to be the first comprehensive one for the expanded machine.

And comprehensive it certainly seems to be. All the controls you'd expect are there — speed, brakes, undercarriage, etc. In fact there's everything you need to take control of several tons of metal and a plane load of human beings.

In what must rank as the understatement of the year, the title card mentions that the

simulation has been mathematically calculated. When you consider the facilities offered by the basic Vic, the term "minimally condensed" seems more appropriate.



There's not room for a through-the-windows display but the screen's full of data and gauges. These are well presented and

respond satisfactorily to keyboard inputs.

The instructions supplied are clear enough to allow even the non-aeronautical amongst us to take off and fly along for a bit without killing anybody. Landing is another story.

Talking of landing, a nice touch when you crash (which you will) is a little message box telling what went wrong. Though it probably wouldn't satisfy the Civil Aviation Authority I found it pretty useful.

A great program. A must for aspiring flightdeck enthusiasts.

Program: Flight Zone One Five, Vic 20

Supplier: AVS

Price: £29.95

Graphics: ★ ★ ★ ★

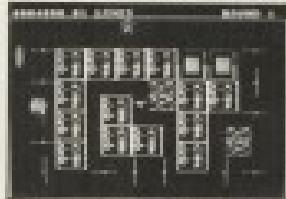
Sound: ★ ★ ★ ★

Gameplay: ★ ★ ★ ★ ★

Dreilbs in trouble

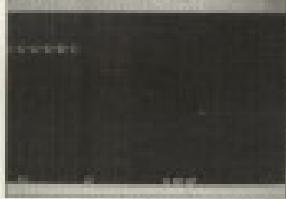
A bit of a peculiarity, this one, perhaps because of its exterior in unusual graphics than a game. On first loading, the game grid looks like something similar to Pachinko, but that's misleading. The object of the game is to control your Dreilbs around the screen's Pachinko grid, where he must lay the paths to form snakes, which then grow. Opposing him are

the wacky Trollboars, who try to break



down the lines. Having completed all the

task much like a snake charmer,



Dodge the mines for a bit and you can

possibly square on one screen, your Dreilb must jump through a magic window into the land of the sinister Gorgoloids, and free the captured Dreilbs bound there.

Dreamlike, mysterious, frantic fun, and the standard Screenhead Tandy also enjoys the grids.

Overall it's a bit whacky, but very playable. Check it out.

Program: Dreilbs, 64

Supplier: US Gold

Price: £19.95 cassette, £24.95 disk

Graphics: ★ ★ ★ ★

Sound: ★ ★ ★ ★

Gameplay: ★ ★ ★ ★

Snake snack

If you bought a Vic 20 as part of the £140 Starter pack, you'll recognise Space Snake as a version of the two games given away in the deal.

Set in deep space, you have keyboard control of a snake, or more precisely a snake's head, as it struggles to avoid the snakes that fly at it from the right-hand side of the screen.

The snakes don't look much like snakes, but that's OK, because the snake doesn't

the entrance of a long winding tunnel, the floor of which is littered by eggs. Grabbing one of these causes the tunnel to end and you're back slithering the same again.

Space Snake has all the features that make this such a huge success — the graphics are basic, the sound's awful and the scenario's pathetic. It's also very, very playable. Should do well.

Program: Space Snake, Vic 20

Supplier: Commodore Business Machines

Price: £4.95

Graphics: ★ ★ ★

Sound: ★ ★ ★

Gameplay: ★ ★ ★ ★ ★

Ducking and weaving

This isn't up to the standard we were led to expect it might be by the popular Colossus. However, at £1.99 it's difficult to complain about a perfectly playable little arcade game like this.

There are five screens, and in each your space ship is controlled by the joystick. In the first, bouncing aliens must be avoided for a certain time — you can't shoot them. In screen two, you must dodge meteoroids

periodically which are impervious to your weapons. The rest is a bit more original, in



that you must travel up a tractor beam to dock with a mother ship, avoiding asteroids

and high passing walls. Next, you have to travel through 20 floors to destroy the alien mothership, and lastly you must struggle to activate the defence system of the new planet which is to become your home. I admit I haven't got that far yet, but although the graphics and sound effects are fairly laughable I think it's fair to say that this lot should be enough to keep the kids happy on Christmas morning.

Program: Sasser, 64

Supplier: Mastertronics

Price: £1.99

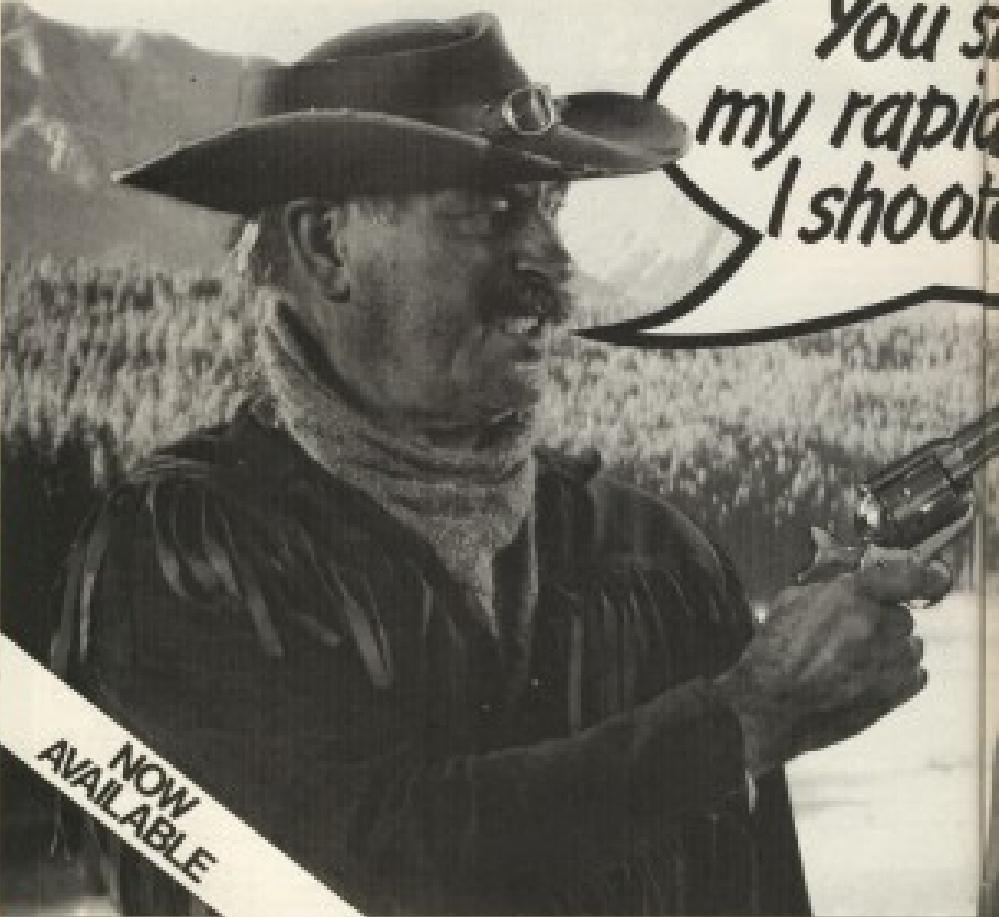
Graphics: ★ ★ ★

Sound: ★ ★ ★

Gameplay: ★ ★ ★ ★

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CLIFF HANGER

AUTHOR - JAMES DAY ORIGINAL MUSIC - BRAIN DOE

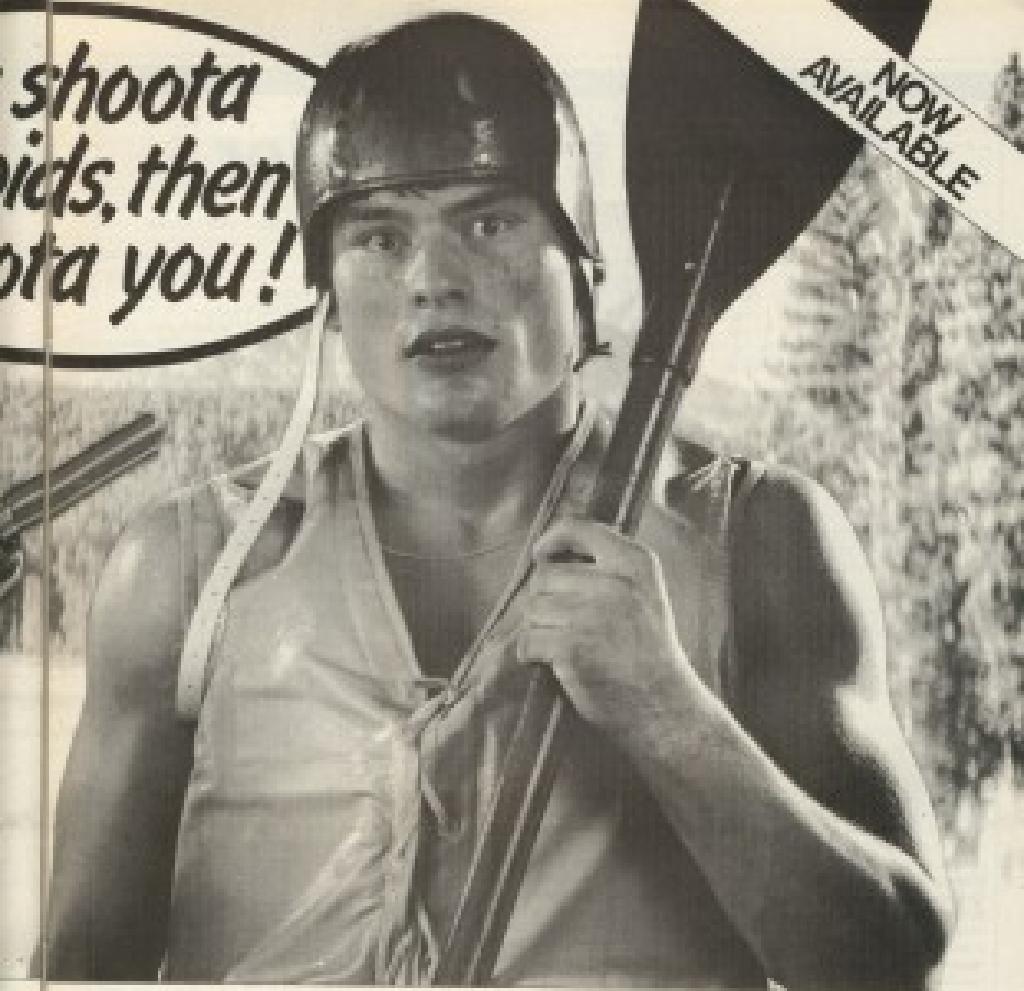
Thrill to the cartoon style action of Cliff Hanger, a really original, Wild West game. As Cliff the hero, you've got to stop the bandits shooting up the canyon. But with its own brand of wacky cartoon action fun, things simply aren't as they seem in Cliff Hanger. For a start, the boulder you throw at the 'ol bandits may just come bouncing back at you.

Cliff Hanger incorporates all the elements that have made New Generation games best sellers for the Spectrum, such as original ideas, superb graphics and hilarious happenings - but now it's available first for the Commodore 64. Featuring 30 separate screens, three levels of difficulty, one or two players scoring, Hall of fame and joystick compatibility or user defined keys, Cliff Hanger is set to be THE Commodore game playing sensation. Available from any good software store for just £7.99.



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NOW
AVAILABLE



Shoot the Rapids

AUTHOR - PAUL BURKE

Ever wondered what it would be like to face the fierce white water in a top class canoeist slalom race? Well wonder no more because you can enjoy the fast action thrill of competitive canoeing from the comfort of your own armchair with Shoot the Rapids.

It's a game that involves real skill because you must move your joystick to simulate paddling action. You must get through the gates of the slalom course in the fastest time possible, while avoiding the river bank and rocks. There are also extra hazards like rogue speed boats and insatiable beavers to worry about.

This multi level game features increasingly difficult river courses with superb graphics and smooth scrolling along the river. Qualifying times have to be reached to move onto the next course.

With Hall of Fame, one or two player scoring and joystick compatibility, Shoot the Rapids is probably the best sports action simulation game devised to date. Available from any good software store for just £7.95.



Software
Box Artwork
by Paul Burke



New Commodore products are sold according to
their terms of trade and conditions of sale

Beyond the frontier

The software house with a background in role-playing games has plans for 1985. Chris Jenkins talks to Clive Bailey

HAVE YOU EVER paused to think that playing computer games doesn't just use revolutionary elements — the introduction of high technology into ordinary households — but *real*? The other is, of course, the concept of games playing as a hobby.

Until the computer boom most of us only played games either than physical sports on early Sunday afternoons or at Christmas. The concept of collecting and playing games, in software form or otherwise, is a relatively new one, and will probably become the subject of many a sociology thesis in the 21st century, when all the work is done by machines and we will face the problem of entertaining ourselves not just on early Sunday afternoons, but 365 days a year.

The software house Beyond is made up largely of people whose previous experience was in the field of board and role-playing games, strategic simulations and Dungeons and Dragons-type fantasy adventures. Now they are trying to do for the software market what they did for the games hobbyists: provide not only quality products, but an involved and sympathetic back-up service.

Experience

Marketing manager Clive Bailey explained that Beyond, a division of a well-known publishing company, was founded in 1981 by publishers Terry Frost and Bill Deacon.

Terry is a very experienced publisher in the computer market, and Bill has a remarkable eye for a good product. Together they re-marketed four games for a range of computers — including *Goodness Gracious* for the 34 — and having assessed the demand and established



Clive Bailey

trade contacts they launched Beyond in April '84.

Beyond currently operates in an unique way — labelled as a magazine, the company is obliged to release games as soon as they are ready in order to satisfy accounting procedures. "We're hoping all that will change in '85," continues Clive — "we'd like to be more independent, so be able to release games off a shelf without building up stocks, and be able to provide them to the press beforehand."

The Beyond launch titles, *Pyrion* and *Lords of Midnight*, were for the Sinclair Spectrum, though both are now available for the 34. *Pyrion* is typical of the combination of arcade action, strategy thinking, and high-quality programming which all Beyond titles feature. *Pyrion* is the defence computer of the British Space colony, and the challenge of the game is to survive in real time for one hour, while defending the colony against saboteurs, alien spacers, supply shortages and equipment damage.

Mike Singleton's *Lords of Midnight* has made an immeasurable impact on the computer games market; more than just a graphics adventure, it features a "landscaping" technique which shows the view through the player's eyes at each step of the game. The player's objective is the defeat of the evil Desdemona, either by military means with the aid of the Lords or by The Quest, in which the character Morlork must find and destroy Desdemona's basement. With 12 characters to control and 4000 graphic locations, *Lords of Midnight* can be a complex and rewarding game to play.

Author Mike Singleton, like all the Beyond authors, does not work in-house. "Mike has been designing games since the age of nine," explains Clive, "though his

speciality had been in play-by-mail computer-mediated games such as *Starship*. *Lords of Midnight* was his first attempt at producing an adventure game you could watch as well as play. We like to think that the success of *Pyrion* and *Lords of Midnight* was the salvation of many game dealers through the slow summer period — because they appealed to the hobbyists, they sold steadily, whereas other games still seasonally. Mike's carrying on the series, with *Desdemona's Revenge*, in which Larion the Moonspirit searches for his kidnapped son Morlak. There are 6000 locations in this game, and 128 independent characters. The third part of the trilogy, *Ryo of the Moon*, is planned for release in the spring."

We asked Clive why Beyond launched their major games on the Spectrum, and have only now reached the stage where launches are planned on the Spectrum and 34 simultaneously. "Part of the problem is finding sufficiently experienced program converters. Terry O'Brien and Paul Viprey produced *Pyrion* and *Pal Warrier*, the follow-up. Hollie Viprey did the 34 conversion of *Pyrion*, and we were very pleased with the results. Once you'll find that programs converted to the 34 from the Spectrum lose quality, but with our converters we think they get better. Sound effects and graphics are certainly better on the 34, and we want people who can make the most of that."

BLITZ

"Another of our concerns is cost. We've priced *Pyrion* at £7.99 and *Pal Warrier* at £9.99, which we think represents good value for the reader and the customer considering the complexity of the games. At the same time our market research indicates that there is a market for less-machined



price at lower prices — the 10-14 age group looking for shoot-'em-ups pure and simple. We're thinking of launching a separate label to put out this kind of program, tentatively called Blitz. The total of price will be looking at would be \$19.95.

The main body of the market will consist of 14-21-year-olds, about 20% of whom are female. We don't particularly aim for the female market, though there is a strong tradition of females playing role-playing games, but Disney's *Revenge* features both a villainess and a heroine. What parts many females all play computers in the computer games — like, typos, ROM and RAM are more primitive, and we try to avoid unnecessary technical references. Our game packages and instructions aim to be an interesting read rather than a technical exercise."

Replay's last four games, bought in from America, are admittedly "fillers", to keep the company going. "If they'd been released when we intended to bring them out, in May, they would perhaps have made



Terry O'Neil — experienced a bigger impact. As it was, technical problems delayed them until September, and now perhaps they don't look so impressive." O'Neil is judging from the point of view of someone dedicated to the highest programming standards — in fact *Arakis*, *Araxis*, *MyClass 2* and *Mr Robot* are all impressive programs in their own right. *Araxis* is a surreal metaphysical challenge in which you must maneuver a "transputer" through an interconnected set of chambers, solving problems based on, but not necessarily dependent on, logical thought.

Mr Robot is a 3D-action Basic/Mimic-like challenge, with a difference; after navigating all the rooms, you can design and set up to 26 screens on your desk, using a cursor to select and place features.

Araxis is a complex, underground adventure, featuring high-quality animation. The hero, an Indian Jones-type explorer, matches through the levels of a forbidden temple. The hero can walk, run, jump, shoot, crawl and fight with a variety of weapons, and must brave attacks from puppets, snakes, rotting plants, dimensions and spiders.

There's also a powerful three-dimensional chess program, *MyClass 2*.



"They're all good games, but not state of the art. The Americans are desperate to dump software on the UK, because they made the mistake of treating games software as if it was big business venture instead of a cult or hobby. They're finding out now that you can't just keep pumping out products, like pop music, which is absorbed passively; only very high quality product will sell continuously, since it's really a seasonal market."

Revolutionary

"We'll always consider product from American companies, although many of the best ones have now been signed up by big corporations. One of the products we're working on is *Spy Vs. Spy*, from *Playstar*, based on the Mad cartoon strip. This features cartoon-quality graphics and a revolutionary split-screen technique called *SmartVision*, whereby two players can switch each other's characters, the White Spy and the Black Spy, searching an embassy for hidden documents and planting bombs.

The Warlord is designed by the creators of *Poynton* and features the hero travelling on a surfboard-like hoverplane through a planet like rock-stick-at-Polyominos. The perspective graphics are very interesting, and as you progress through the game you can acquire certain skills such as teleportation, invisibility and other bonuses.

"There are several other products at various stages of production. *Operation Blitz* uses the landscaping features of *Lord of Midnight* combined with arcade features. *Nash* is a follow-on to *Araxis*, using the same kind of lateral thinking



problems. *Shadow Squad* is being produced by *Dynamic Design*, part of the fall-out from *Imagique*. It's a science adventure featuring a team of six heroes and shadow operatives carrying out a daring mission in space, and using some of the routines for character interaction derived from the ill-fated *Mirage Games*.

"We're also thinking of starting up a series of expert systems programs, based on the many magazines published by our parent company. We can establish the audience through market research, and consider programs based on hobbies like fishing or gardening."

"At the same time we're looking at the idea of an international label to put out Japanese and European games."

"Our promotion plan rely on word of mouth rather than heavy advertising and hype. The game-playing market went through everything the software industry is going through, starting with low-quality products and working up to very sophisticated end games."



Bill O'Neale — we've got a good product

"From my marketing experience in printing, books and oil companies it's clear to me that what we have to do is present the product to the consumer in an exciting way and at an affordable price. What I'd like to do is promote games with competitions and good PR, rather than with inflated advertising claims."

"The owner of the *Lord of Midnight* system, John McElroy, was so fond of this winning game transformed into a novel. That idea fell through, but what we're considering now is a role-playing game or fighting fantasy collectors edition magazine instead."

"What we're trying to do is work through distributors like *Commodore* and *Microdistributors*, who we think give a good service, and establish *Reycom* in such a way that the customer makes a conscious decision to buy Reycom games because they know that they're high quality. A percentage of purchases will always be impulse buys, but we want to build up a regular following."

"We're trying hard to do things in a friendly way the software industry isn't renowned for doing for doing things well, but we're getting there." ■

**HOW TO SAVE
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ON THE COST OF
SOFTWARE
AND HARDWARE
'ADD-ONS'...
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LOGIC 3

Beefing up Basic

Chris Whittemore studies three extension packages for the 64

YOU WILL ALL, no doubt, have read time and again about how limited is the Commodore 64's Basic. CBM has taken a lot of stick for not upgrading the language when this otherwise fine computer was released. Having said that, we all were can and bought one just the same, so perhaps it's not so bad after all. Looking on the bright side however, the lack of 'improved' commands has meant gainful employment for many a software genius, writing Enhanced Basic packages. There is now a multitude of these on the market at various prices and, one assumes, varying quality.

Disk version

One such package is Breden's Basic from Vision Software, which comes with a manual and a copy of the program on both tape and disk, so that when you buy the disk alone you've always punched yourself, plus you'll have to pay out and buy the 'Disk version' of the software (costing more expensively you will already have it). Also, if you are lucky enough to be running disks, the tapes are bound as a back-up in case of untimely disasters.

The program itself only uses about 4K so not only does it load in no time at all, even from tape, it also leaves plenty of room for you to do your own thing. The manual is well laid out and is divided into sections using 'cross-referenced' index cards. Each command or function is detailed on a single page showing the Format, Parameters, and an explanation of exactly what it does. There is also a note at the bottom of each page listing keywords related to the one being described. I have to say that this really is the best manual I have yet come across. ALL the necessary information is

supplied, and it's easy to find and simple to understand. This is how all manuals should look to writers, though presumably let's see if it lives up to expectations.

When the program is loaded you are presented with a title page confirming that you have Breden's Basic running and that you have 20961 Basic Bytes free. All commands can then be used as in 'normal' Basic.

The first group of commands concern themselves with the creation and movement of Sprites graphics. There are 11 commands which enable you to do just about anything that you may want to do with the little buggers, including Expansion, Priority selection and Collision detection.

Sound chip

The next section has 29 extra commands related to the control of the voices and graphics characters, and includes the widely used PLOT, DRAW, HIKES and COLOUR. I won't go into detail here as to do so would require taking out the entire magazine for this review, but suffice to say that with these commands at your fingertips there is almost nothing you cannot do when it comes to Graphics, colour, drawing lines and rectangles, multi-colour mode and User-defined graphics.

Second is new, and there are 32 commands to help you go the last bit of the 64's sound chip. Dedicated are ENVELOPE, WAVE, PITCH and others that allow ready access to the delights of Ring modulation, Synchronization and Filter techniques.

Integer/Decimal manipulation is one area where most people get troubled... but with Breden's

Basic there are 11 commands to make life a little less complicated when dealing the Keyboard input, joystick direction or lightpen position. Disk commands are next... DSR for reading sectors, DIR for listing files and DOS which has 10 variants for doing most jobs from Formatting onwards.

Functions

Number juggling can be difficult on the 64 but not with this program to help. There are 21 commands which ease the trials of Fractions, Math, conversions, Radians, Bit testing and other mathematical nightmares. Four commands are included for error trapping and 13 more under the heading of Programming Aids. These include assigning groups of characters to Function keys, memory Load and Save, reading parts of programs, key repeat and a 'quick keyword entry' mode. When using the alpha-10 key with either the SHIFT or CTRl key will cause the computer to print the relevant keyword assigned in the key pressed, a list of which appears in the Appendix.

Next we have 11 Enhanced Programming Structures, making Repeats, Loops, and much simpler using the WHILE...END...ELIF, REPEAT...UNTIL format.

I was slightly disappointed to find that there are no AUTO, REMEMBER, or MEMORY commands... but there are 19 other useful ones! Apart from that small gripe, this is an excellent package and if you are looking for a Basic Extender then you MUST try this one out... and at £19.95 it's not expensive.

A cheaper Extension Pack is Supabasic from Interceptor Maths. This one sells for less than £10 and has 32 new keywords. The



package consists of the program as cassette but it doesn't take very long to load) and a booklet listing all the commands available. It is divided into eight sections, the first of which covers Graphics. The "main" section also lists including HIRE, FLIT, DRAW and a rather nice WINDOW facility which allows you to display moving Text at the bottom of a HIRES screen.

The section on Sound only has five commands, while the VOLume, ENvelope, MuteVolume, PULSE, write and PLAY. While these may be sufficient for putting sounds in games, they have something to be desired if you wish to be a little more adventurous on the music front.

The Programming And section has 22 extra commands including COLD, RENUMBER and REPEAT. There are four more to help in Error trapping and a KEY command which lets you define the function keys with strings of characters.

Sprites

Sprites and User-defined graphics have a section all to themselves. The commands included will allow you to set up Sprites, move them about the screen and check for collisions with other Sprites/Springs or Sprites/Background. There are six Input/Output commands provided by SuperBasic - coupling Tape, Disk and Joystick operations. Faster manipulation of numbers and strings is accomplished by seven commands, including converting Hex to Decimal and vice-versa and reading the function keys. Memory manipulation only requires four commands; DISK and DORE for reading

and writing two consecutive memory locations and CDRK and COGE for reading and placing characters in memory.

The last section is dedicated to screen control and has 10 commands to help with screen and border colours, screen scrolling and cursor positioning. Most of the 72 commands can be abbreviatied; many of them in a single letter followed by a full stop. Although the manual is not what I would call comprehensive, it is adequate, bearing in mind the cost of the package.

If you can't afford (or don't need) one of the more elaborate Basic literatures, then this one is certainly worthy of consideration, especially as it costs no more than one pound's game.

Also called SuperBasic but this one (aptly (poorly) is another package that sells for less than £20. This one is by Century Software and contains 36 extra Basic commands. The first thing that warns me to this piece of software is the note in the booklet explaining that it resides in the 4K block from \$C000-\$FFFF and makes extensive use of the static memory locations in pages 0 and 2 of the RAM; any programs using these areas of memory may corrupt SuperBasic. I wish more companies would tell us where their programs hide so that we could avoid making a mess of things when using these types of utilities whilst programming.

The first five commands we come across can only be used in immediate mode and not within a program. They are AUTO, DELete, RENUMBER, COLD and PAUSE; all self-explanatory. The seven other utilities

are DEER, DORE, PAUSE, RESET, HMEM, AT (for placing the cursor at any screen position) and PCOF (for exiting nested subroutines).

There are seven Sound commands in SuperBasic, and although none are concerned with King Seal or Sync, this program does assist in the use of Filters.

Graphics

Next come 11 commands for controlling the Graphics on the 64. There are two types of display material text, using 1000 bytes of memory and the two hi-rescoped options which use 8000 bytes and have individually addressable pixels. Three of the commands alter the colours of the text display and the other eight control the high resolution graphics.

There are six more to help you set up your Sprites, move them about the screen and position them both horizontally and vertically. Everything about this package is extremely well done; the software itself works, the examples given are very helpful and all the commands are sufficiently explained. Considering the price of this package, it is quite excellent.

When looking for a Basic literature, we all have different requirements and different amounts of money to spend, but I will say that, whether you need something as comprehensive as Rodent's Basic or whether you have set your sights on one of the more modest offerings, each of the three packages listed at least in vicinity of a place on your shelves. ■

REAL ARCADE ACTION! FROM JETSOFT

BMX STUNTS
BMX Stunts is based on the original arcade game the action packed game features over 20 levels of trials, straight line, slalom, ramping, gravity assist, jumping, etc., the ultimate test over 200 skills in the leader table.

Clawdron II
Clawdron II is a fast-paced, action packed game where you must survive using various power-ups, taking care not to damage the claw or the claws will break. Features include multiple levels, unique power-ups, and a high score table.

Quari Quari
Quari Quari is a uniquely styled and unpredictable game. Based on the game Bally's you must survive using various power-ups, taking care not to damage the claw or the claws will break. Features include multiple levels, unique power-ups, and a high score table.

JetSoft

other arcade people

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Koala

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Imitate the tiger

Start the tiger in the Touchmaster graphics tablet today
and you'll be the tiger tomorrow... tomorrow's graphics tablet.

THERE ARE lots of graphics software packages for the 386 and 486 which enable you to achieve satisfying results with the high-res multi-colour facilities of the machines. Octetron's issues looked at many of these programs, and future articles will cover the latest graphic software. In this article we're more concerned with the hardware, which is becoming cheaper and easier to use all the time.

Just as an artist has his palette, the computer graphics programmer must sometimes feel the need for a solid surface on which to work, rather than the usual cursor keys or joystick, which give little feeling of "painting" on a 2-dimensional surface.

Until recently the only other option was the lightpen, and we'll be looking at one of these inexpensive, simple units, the Pixstix from CIB. First, though, two graphics "tables": the Touchmaster, and AudioGenic's KoalaPad.

Touchmaster

Although graphics tablets have been in use for many years in various CAD computer aided design applications, it's only recently that the technology has become cheap enough, and the user friend-

wide enough, for it to be practical to design units intended for home computers. The latest on the market is the Touchmaster, which is produced by a company set up by ex-employees of Dragon Data, members of the Dragon Computer.

Touchmaster claims to be much more than just a graphics tablet; the advertising poster is at a revolutionary new way of talking to your computer, avoiding the need to use QWERTY keyboards. Although this approach may be successful with computers like the Apple Macintosh, which uses a "mouse", it hardly seems necessary to simplify even further the playing of games. In any case, Touchmaster comes supplied with a graphics software

package, and since the games, educational and other utility "Touchware" pack isn't available yet, let's just consider it as a graphics tablet for the moment.

Brackets

Touchmaster has an A4 size coated surface, over which is placed a thin plastic overlay printed with the control areas. The Touchmaster has its own mains adaptor, an interface cable to plug into the 386 or 486's user port, a plastic case, and comes with a user guide and Touchware catalogue. Once set up, possibly using a disk drive on the computer, the result is a spigot-like mess of cables.

Touchmaster also has a four switch socket and serial port, though these are of no immediate use.

The bracketed program is loaded from tape or disk, and using the keys on the overlay you can select all the options which are familiar from various purely software-based graphics packages.

At the top of the screen appear the words BRACKET 0, 1, 2, 3, with a block of colour to the right of each number. Bracket 0 is the background colour, while 1 and 2 are highlight colours which can be used in a variety



of square dot, vertical block line, horizontal block line, and right or left diagonal. To change brush type you just press the appropriate box on the overlay with the stylus, and remove the pressure when the style you want is indicated on the screen.

Brush widths can also be selected in stages 1 to 8. There are several powerful shape commands, including two types of Circle, and Polygons using from three to nine sides.

Fill allows you to colour areas bounded by lines, and there are also Line, Dot, Text, Zoom, Erase, Load and Save, and View just to name the current commands.

Touchmaster is a reasonable product, but really overpriced for the market at over £120. Despite claims for the accuracy of the touch-sensitive surface, the cursor movement seemed wobbly and slow. The overlay tools do slip or scrunch if too much pressure is applied.

KoalaPad

Only if the forthcoming Touchware products show a good deal of originality and novelty will Touchmaster stand a chance of dominating the market.

The major rival is the KoalaPad, distributed by Audiogenics, which as its name suggests is a small, costly graphics tablet.

KoalaPad is more like A3 size, and is a handy wedge shape with two chunky control buttons. Recent revisions to the software, which is currently available on cartridge, disk and cassette through the cartridge version is to be phased out have made the KoalaPad more happy with the PAL TV system — the original American NTSC-based version would show stripes rather than true colours on UK TVs.

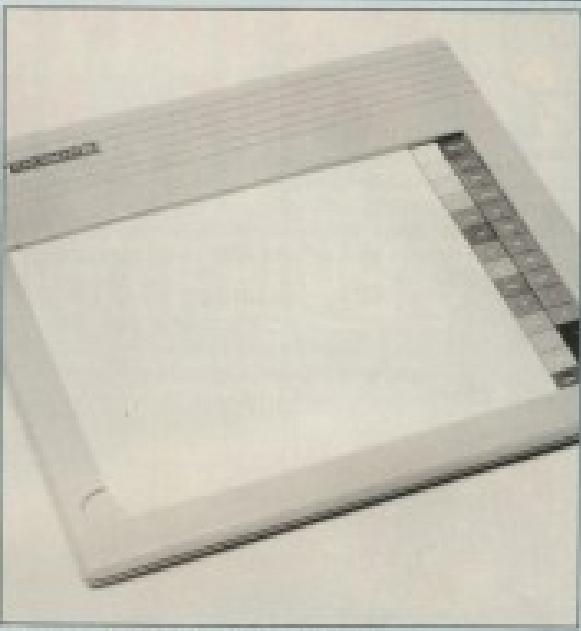
At £99.95, KoalaPad is much closer to being a reasonable price for the occasional user. Moreover, the software doesn't suffer at all from not having the Touchmaster's overlay facility; the touchscreen command display is easy to follow and makes selection of all the available options easy.

The pressure-sensitive surface of the KoalaPad also tends to give quick and steady cursor movement, and connection is simple since no separate power supply is needed and the pad plugs into Port 1 on the BBC. Once the command display is loaded, positioning the cursor in the CRTC area and pressing a control button gets you into draw mode. Move the cursor off the bottom of the screen and the screen blanks. You can then draw by pressing down a button and moving the cursor on the pad surface. Release the button and the drawing will stop.

Attraction

The menu consists of Command, Brush and Colour Painter sections. Commands include Circle, Line, Disk, Box and Frame, all of which have a Transport feature which allows part of a design to be moved to any part of the drawing screen.

There are eight different brush shapes, and 16 "patterns" in which you can paint as well as the usual 16 colours. There are also Mirror, Map, Zoom, Fill, Paste, Copy and Key commands, and even a Swap



The KoalaPad graphics tablet — advanced but expensive!

facility which makes it possible to take shapes from one screen, "A", and transfer them to another, "B".

Obviously there are also a full range of Save and Load commands, so your masterpiece can be kept for posterity.

Also included in the latest KoalaPad package will be a KoalaPainter utility, which enables graphics to be hand-drawn with a suitable dot-matrix printer.

Overall, KoalaPad is an attractive offering, this product at a reasonable price. Educational and games software packages are promised, and since Audiogenics intends to manufacture the software itself in future there should be no supply problems. Highly recommended.

Budget

For the budget end of the graphics market, the PicSoft has been redesigned, this time by CBS. All software will be available on tape, in line with the budget price range of eight pence, and both 80 and Vic 20 versions will be available.

Light pens work by interpreting the screen cursor position by calculating the elapsed time between the start of the scan and receiving the light signal. As you'd imagine, this method doesn't lend itself to great precision, and all light pens therefore tend to give wobbly results.

PicSoft, which plugs into the joystick port, comes with a graphics program, Painter, and four games which are at most rates in demonstrating how the lightpen works better than they are as entertainment.

The Painter program has a brush, colour and command menu display at the top of the screen, and XY coordinates for the coordinate position. The rest of the screen is a blank drawing surface.

The left-hand shift key is used to action a command over the right box in selected with the joystick right. You have to move fairly slowly for the cursor to keep up with the lightpen, which is the main disadvantage of the system. However, the range of commands is good, with background, line, rectangle, fill, circle and clear commands as well as a variety of brushes.

Uniquely, the Painter software features an Animator routine by which four images can be displayed in sequence to give a cartoon effect.

The PicSoft manual is unusually comprehensive, including worked examples of drawing and animation, as well as code carrying from the designer's and details of how to use the lightpen in your own programs. On balance, although a lightpen is not such a satisfying graphics aid as a tablet, considering the pricing, which is under £30, it's certainly an option worth consideration by the inexperienced computer artist.

For further details of these products, contact Touchmaster, PO Box 1, Port Talbot, West Glamorgan, SA10 5AR; Audiogenics, 19 Sunray Industrial Park, London Road, Reading, Berkshire, RG1 8AA; CBS Computer Software, Addiscombe House, 3-5 Knebbone Place, London, SE16 5ZT. ■

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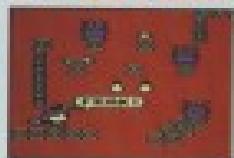


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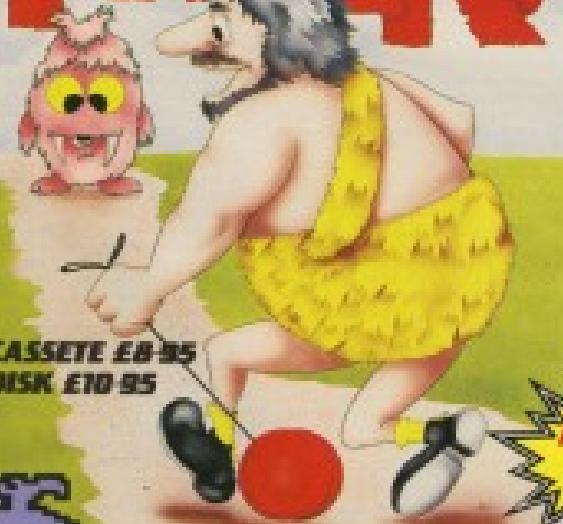
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64 star game: Jeff Minter



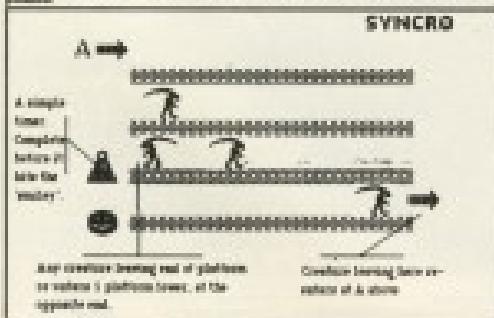
SYNCHRO: a Game of Skill by Jeff Minter

(1) A Brief Description of the Game.

SYNCHRO is a test bed of manual dexterity and quick thinking. You control the motion of a set of four conveyor belts. Along these belts are several Ascipliate creatures. Each is running with a different velocity. Your aim is to manipulate the conveyor belts in such a way as to leave all the Ascipliates running on the spot, each on a different belt. Moreover, you must do this so that each Ascipliate comes to rest in a certain spot on each conveyor belt, the 'Syncro Zone'. Once all four Ascipliates are static and within their Syncro Zone, you have completed that level; bonus points are awarded depending on how long you took, and the game proceeds to the next difficulty level.

(2) A Look at the Screen Layout.

The following diagram should help to indicate some of the game's vital points:



Using the joystick in controller part 2, you select which platform you want control of by moving the stick up and down (the selected platform pulsates). Once a platform is selected, its speed is controlled by left/right motions of the joystick. By varying the platform's speed, taking into



inter's Syncro



FEW GAMES PLAYERS will need an introduction to Jeff Minor and Ullmann. Since the earliest releases, Jeff's games have had a reputation for brilliant programming, music, animation and exceptional playability. Most have been influenced by the running theme of hairy animals — Muttant Canine, Sheep in Space, and Anticipate, to name a few.

Now that the hairy duo has written a 44-page specialty for Commodore Horizons, it features the Anticipate as all know and love, and presents the greatest challenge you'll ever have faced on your 64! The machine code program has been converted into BASIC statements by Kevin Berlin. When typing in the listing, which incorporates a checksum routine to minimize errors, follow the instructions in the introductory REM statements that carry on through the rest of the program.

For a copy of the newsletter *Nature of the Beast*, send an S.A.S.E. to Ullmann, 49 Mount Pleasant, Taunton, Mass., 02784.

Turn to page 42 for SYNCRO

control the Anticipate's own velocities, you can control the positions and speeds of any creatures on your platform.

When an Anticipate is in a 'syncro zone', it will begin to pulsate. Get the beast static in the syncro zone, then move on to the next platform. The syncro zones can be in any position on the platforms. Keep an eye on the Anticipate passing through; you'll see them flash as they pass the zone.

Any Anticipate going off the end of a platform re-enters on the platform lower down, at the opposite end to the one it left. Beasts leaving the bottom platform re-enter at the top. Once all four Anticipates are stationary within syncro zones, that round is complete.

There are complications, however. The Platorms have a tendency to slow down. When they start to do this, any anticipet will, of course, begin to lose motion. On the higher levels of the game it is necessary to constantly tend to already-placed creatures when they start to drift.

You are up against a time limit. If you don't achieve space before the 16-second limit hits the Valley face, the game is over. The weight is reset at the start of each new round.

You may also press the 'syncro button'. When pressed, it sets the speed of the current platform to match the opposite of the first Anticipate's location on the platform. The effect is to halt that Anticipate. It's useful if you need to position an antipet quickly in the syncro zone; just press the button as it passes through. You can even use it on an already-static Anticipate if you think that the platform is just about to slow down. Pressing the button re-emerges the platform.

Take care with this control, though: you are only allowed 9 presses per round, and if there is more than one Anticipate on the current platform when you press, you may find that the platform matches the velocity of the wrong Anticipate!

The game has 10 levels. Each level consists of 4 rounds. Levels get progressively harder in that the tendency for the platforms to slow down increases. You'll need to use the syncro button more often, and be quicker in your manipulation of the Anticipates or they'll soon drift off station.

You'll probably find that it'll take a little time to get used to the game because the concept is not one you're used to (see straightforward Up, Down, Left, Right, Fire!). The game is all the more enjoyable for its originality, and there's a nice bit of boogie-woogie music in there to add to the enjoyment.

My best score to date is about 4500 odd, and I got to round 2, level 5. Good luck!

Computerama 64

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3090	DATA121, 128, 0, 137, 234, 0, 234, 252	3770	DATA122, 35, 235, 98, 28, 235, 192, 28
3100	DATA120, 99, 234, 0, 7, 126, 0, 7	3780	DATA122, 192, 18, 143, 128, 3, 234, 0
3110	DATA127, 0, 7, 127, 0, 3, 127, 0	3790	DATA120, 112, 0, 128, 0, 0, 0, 0
3120	DATA120, 127, 0, 117, 128, 0, 121	3800	DATA120, 0, 0, 0, 0, 0, 0
3130	DATA120, 0, 321, 193, 0, 238, 240, 0	3810	DATA120, 0, 0, 0, 0, 0, 0
3140	DATA124, 112, 0, 224, 240, 3, 224, 76	3820	DATA120, 0, 0, 0, 0, 0, 0
3150	DATA122, 234, 0, 128, 0, 235, 128, 7	3830	DATA120, 0, 0, 0, 0, 0, 0
3160	DATA122, 234, 0, 14, 0, 14, 38, 0, 0	3840	DATA120, 115, 192, 28, 235, 192, 43, 235
3170	DATA121, 128, 0, 127, 240, 0, 247, 252	3850	DATA122, 82, 143, 234, 25, 1, 172, 28
3180	DATA120, 99, 234, 0, 7, 126, 0, 7	3860	DATA121, 192, 12, 249, 128, 3, 234, 0
3190	DATA127, 0, 7, 127, 0, 3, 127, 0	3870	DATA120, 112, 0, 128, 0, 128
3200	DATA127, 0, 0, 127, 0, 0, 234		
3210	DATA120, 0, 348, 0, 0, 235, 0, 0		



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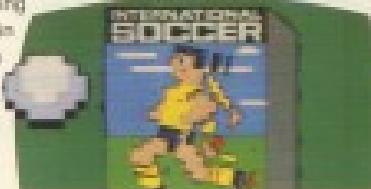
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TOWER OF ADVENTURE

The rules of Conway's castle

At last, a Commodore adventure column. Dungeon mistress Barbara "The Barberista" Conway sets the scene . . .

WHEN IT COMES to computer gaming, enthusiasts tend to divide into two camps — the ones who enjoy the adventures. There is, admittedly, some degree of overlap between the factions but, for the most part, devotees of rapid-fire arcade games tend to prefer to pursue their reflexes, while adventure addicts attend their brains. After which high-brow opinion, you won't have much difficulty guessing that my own inclination is very much more towards a tectonic game than shooting up 120,000 points on "Asteroids".

Unfortunately we seekers after adventure have not, up until recently, been all that well catered for on the Commodore front. The best games available have tended to be arcade, using the machine's limitations of sound and graphics. However, apart from a few excellent (and prohibitively expensive) adventure games from the likes of Infocom across the Atlantic, Plus, however, has had a few outstanding UK software houses and at least one restaurant-quality software to guarantee that has changed dramatically.

Logical

Offerings from two of these notable software houses, Level 5 Computing and Melbourne House, are amongst this month's reviews. But before I get onto them, let me take a quick look at the nub of the question of what makes a good adventure. That, as of course, is highly individual judgement. But, since this individual is doing the thinking, you might as well know what her prejudices are to start with.

Rule One, which must be obeyed by broken, is simple: all good adventures must be logical. That doesn't mean that characters such as magpie might be used. It just requires that, given an environment whether of time travel, space exploration, interplanetary or whatever, it must always be possible to think your way through a situation even you understand where you are. Thus a game which, say, leaves you with a dossier and expects you to guess that the way to escape is to turn three penservent

and stick out your tongue is not being logical. On the other hand the solution to getting a woman over in a Lewis' adventure, frightening a woody chimaera with a mouse so that it jumps out of its skin and runs away, is logical. Silly, but logical.

Which brings me on to Rule Two. A good adventure should stimulate imagination and a sense of humour. The number of "adventure" games which consist of just trudging around a padded killing field, picking up gold and recycling the odd named item in different locations. They tend to be just about as much fun as doing the washing-up. It is possible to inject some humour into a classic "climb-and-diagnose"-type story. The original Infocom's Adventure had plenty of alphabetical locations but a surprising number of them can often just don't seem to make necessary to do much more than "Visit New York", "Find Town", etc., although this right of lists in a catalogue on from things at the till things off.

Rule Three may look like a subset of Rule One. Adventures should not be able to rely on cheap trick. That is, game such as The Valley, in which combat with snakes is frequent and the outcome depends entirely on random chance, is regarded with suspicion. Fighting is acceptable, although some expert adventure mangos will quibble with me, but the adventures should have to rely on judgement to succeed, rather than on shooting which weapon to wield, how to fight or an assist to tell me they are not.

Comments

Rule Four is obviously pertinent when it comes to commercial Adventures. Advertisers should discuss well with authors automatically that the advertiser is liable to insist having to revise chapters, etc. Why can't I have the option of coming to the conclusion of a good story before necessarily?

Lastly, Rule Five concerns screen layout. A text adventure should use good contrasting background and character colours, while a graphical adventure should always give the option to turn off the pictures. However good the story, if the text is

difficult to read then after a time it's a choice between giving up or risking a splitting headache. And, where graphics are concerned, you can get off pretty pictures, however well drawn, if you keep on having to wait for the same ridiculous scene to fill the screen. And bags, I regret to say, are not even that pretty and take far too long to appear anyway.

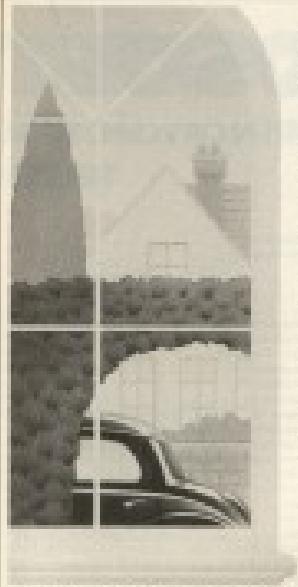
You may notice that the five rules don't specify a complete parsing program or a language interpreter which can cope with multiple instructions since it is possible to have quite reasonable adventures even using the standard two-word "verb followed by noun" format. But it's nice to have a good parser, and I have never understood the reason for programs that force you to parse which instructions they will accept. If the adventuring vocabulary is very large, then perhaps one will be given a basic list of acceptable commands to get them started.

Sherlock

When it comes to large vocabularies and text-based parsers, Melbourne House adventures have "got the goods". Melbourne, it says, which started a new trend in illustrated adventures with its classic *The Hobbit*, and the large spin from this source can only help to reinforce its reputation. *Sherlock*, based on Arthur Conan Doyle's investigations by the famous detective, features graphics, sound effects, and "character independence," which goes considerably further than Shirley Temple used to sit down and sing on television in *The Hobbit*.

Down the off in the parlour of 221B Baker Street and, when the adventure is set in real-time, with an integrated clock, you'll need to do a lot of reworking of your own priorities before the faithful Watson, who is naturally there to give you the spur to action. *Commodore* can be complex, using the Melbourne house "Neural" language, which can come in handy as the moments tick away.

Time really is of the essence. On my first few attempts, when I eventually got to the scene of the clandestinely crime, not to be more terrorist, crime, since no far the crime



across three murders including one owned that ignorant flatfoot Inspector Lestrade had arrested the wrong person and returned to live in peace. One of the joys of English is that, with people less oblique than Lestrade, you can always retrace, get questions or even put them to do things for you. Of course Watson, dear devoted and better than he is, doesn't share much independent intelligence, but then he wouldn't, would he? He does, however, come in very handy for carrying things and since you've said "Follow me" to him, he sticks with you.

Waterson

It's terribly fun, the graphics are rapidly drawn in a small window and can be switched off, and there are some very interesting sound-effects which add to an admirable sense of the Victorian period, steam trains, horses, carts and all that, although preposterous Philip Mitchell and his men have done an admirable job, there are still plenty of irritating bairn and few phoney bugs. Worst of these is the fact that, no matter is the programme, there was no room for a柔道 to explain that you are carrying too much to take anything else. Thus it is perfectly possible to see a pistol in a room, try to take it, and be told that there is no pistol there! And I repeated being told, when I went into the library and tried to look at the books "I am not borrowing". Also, although you can have a game on tape where it is a prison facility on the Spectrum, but not for the C64! once you "quit" you have to reload the cassette to start another game.

But don't let that put you off, the program is a whole 'n' atom. It hasn't unravelled the whole mystery yet, and at the moment I'm lurking, disguised as a Chinaman, outside a house in Lambeth Road, while Watson is following a principal suspect for me. I may let you know more about developments since but, in the meantime, investigate for yourselves. After all, my dear chap, you know my methods...

It turns out that Melbourne House is sporting an added twist this winter. Not only do we get the mystery and suspense of Sleuth, but they also provide us with the considerably more varied, but no less intriguing tales, atmosphere of Hampstead. This adventure, incidentally, is in our hands of Kate Foss, who is the aim of the game to become a "Hampstead Blarney", and the末尾 game is as male-chauvinist as they come. Also, it's also wickedly funny and highly original. No dragons here (unless you count the marauding gangs of traffic waddlers) but the spectre of social disease is every bit as threatening as the prospect of battle with a troll.

Hampstead

The opening scenes are distinctly reminiscent of *Umberto I* and over very fine action, as you find yourself in the depressing lounge of your clings flat with a television showing "J-S-T" in the corner, should indicate how Bertie soon ends up "inside" Hampstead. It's not just a matter of finding that, that's a cliché. But before you are enveloped there you must have closed your eyes up the social ladder, progressing from a genteel sort (and be VERY careful at the beginning or you'll wind up with a criminal record before you've even got yourself as date-quasher fodder, through various stages of increasing smarts and deviancy. Final scenes finds you living naturally into Hampstead life as a dedicated *Guardian* cross-examiner, jogger and *Vandals* with three children at least, one of whom is called Tarquin.

This is test-only, and fairly simple "entertainment" test in that, but you can do a lot with it. Locations vary from year to year and remember that once you've left it you can't return there through the smaller parts of North-West London to the West End, and elsewhere. If you play your cards right and don't get caught in a highly risky manoeuvre, via the corridors of power on the Ultima road, Hampstead itself. This game obeys its own conventions. I might add at last and I have been able to get aid, as a new type resident of Hampstead, I can only say that I authors David Levy and Peter Jones show their faces near the top of Bandy Hill, some indulgent citizens is likely to notice a tall, thin, balding, Afghan Hound, on them, and

quite right too.

Hampstead, incidentally, is one of many adventures to be written with the aid of Gilsoft's excellent Quill program, a utility which takes much of the technical graft out of putting together a test-only game and lets the writer concentrate on producing an imaginative plot.

Imagination has never been a problem for the Level 9 Computer user. Return to Eilan, the second in that company's *Saint*-like trilogy, with graphics to the surrealism for the first time. The plot has you, again Alex Kimberley, struggling both to save yourself from certain execution after being framed for a terrible crime, and fighting racism, and after hours, odds to rehabilitate the sober-dissolute City of Eilan on the planet of Eilan and save your own civilization.

Eilan

Before you get anywhere near the city you'll face if you survive ports ranging from a teleomatic port, through a riddling portal to the shadowed mudbaths (oh, don't ask) and if you actually make it into Eilan you may find that the political-type skills you acquired in *Hampstead* come in very handy. Every puzzle on Eilan has a solution, but lateral thinking is very much the name of the game. If you're desperate Level 9 will supply a comprehensive cheat sheet.

The command format is basically verb-based but the vocabulary is massive. Once into the game you'll be hooked, but Level 9 has made an consciousness-blender as the start. Without a great deal of blind luck you'll probably be freed by the engines of the simplest mindless threat immediately so I have no compensation in telling you the following. Once you've left the credits place there go "E I EIO O D D D D S WAIT". Now you're on your own.

Richard will be running a *user help* service for the really desperate who have got stuck in an adventure. Write to *User of Adventures at Computer Games*, 10-12 East Newgate Street, London, and we'll try to deal with popular problems through the column. Sorry, but we cannot cover *user individual correspondence*.



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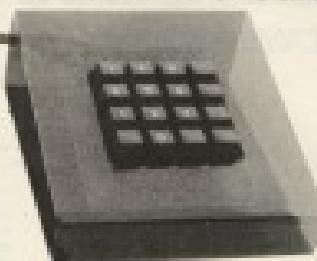
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Comments

Lines 2400 and 2450: This loop creates the number of banks specified. Lines 2460 and 2480: The second loop will create the number of columns specified.

Line Spacing. The start position for drawing each separate column. The position will start at the far right of the number of columns and move line spaces to the left for each new column. In addition, when one has a tabbed, the next box alignment will align with the printed page space down and to the right of the last.

Lines 8070 and 8100 These lines create a dummy loop to default around the section which draws a column IF the value for that column is zero — the loop is a dummy one because it is never executed more than once in any circumstances.

Lines 8888-8918: The loop which divides the main part of the 3-D column. The loop variable is set to move from east to the height of the column. On the first pass through the loop, the base of the column is created — a character from C03 is used to move from the bottom of the base to the colour of the current band. On subsequent passes, different characters are used to represent the side and base of the column as it builds up.

Note that the spatial movement of the printing is created by the use of corner-terminated characters, rather than the use of CHAR to position the printing. To set CHAR would mean that we would always have to know where we were on the page.

Digitized by srujanika@gmail.com

Using the cursor controls we only have to know where the column starts, then move relative to that until the top of the column is reached.

Line 1120: The top of the columns is added. Lines 1136-1140: When the columns are finished there are some rough edges left at the bottom, these have greater than one

Editor

[View a new line](#)

and `END` the program. Specify a unit value of one, three columns and three banks. The names for the rows are unimportant, make your own choice. When prompted for the values of the columns, enter the following:

卷之三十一 雜著錄

You should now see that the three banks and three columns clearly displayed, with the tops of each of the three columns appearing to make a smooth surface from the rear bank to the front. Note that in reading the values for the three banks, you must assume that the top of the front-most bank continues back and up to the rear-most position. In the example on the screen, what you have in three columns, with the three bars in each column representing the

same value, though the front bar is physically lower on the screen. This is necessary to preserve the illusion of three-dimensionality.

Experiment with the program to see how it deals with differing data values. You will find that it will only really work for data where a branch is never higher than the one

ANSWER

Line 640: One thing to note about the PRINT * statement is the presence of a number of RSs in the line. You may remember that in the first module of the program, RS was set equal to CRCHR(10), which is the EOLN\$ character which signifies the end of an item to be printed. When printing several items on a file from a single PRINT * statement, unless RS is included in between the items being printed, all the items will run together. The actual variables printed to the file are really none of the important values which were input to the second module of the

Line 6666 In the commentary on the last line of was stated that RS (or some other suitable equal to CHRS(10) had to be included to separate the items. So why is it not done in the case of these two loops, which print the contents of two arrays to the file on disk? The answer is that whenever a PRINT or PRINT F statement ends without punctuation, the C64 automatically follows the last item printed with a RETURN character — that is why items are printed on successive lines of the screen if the preceding line does not have a comma or punctuation on the end.

Lines 6000-6110: Note that we do not have to use the **RE** operator when INPUTTING data. It is in the nature of INPUT and INPUT+ that they do not recognize that they have received an item of data until after RETURN is forced or a RETURN character goes down the data.

Module 11.3.8 is the control module. Again, you have already entered many of the lines of this module in building up the test procedures on the program. All that remains is to ensure that the module is completed by checking against the listing.

100

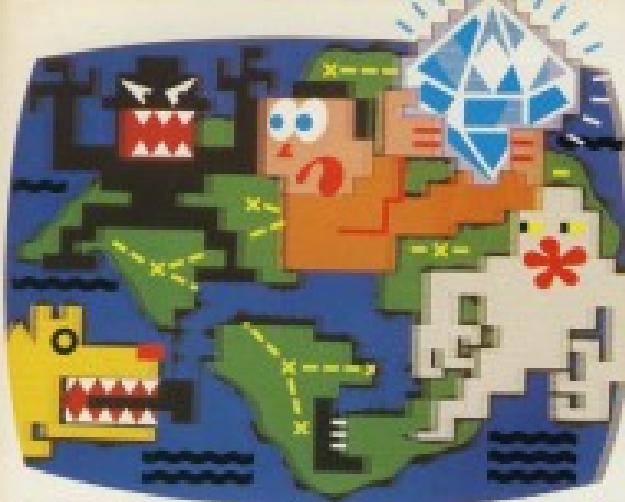
Simply RUN the program. You should now be able to input the data for a graph. When the graph has been displayed, pressing any key will result in the prompt for saving the data. If you respond Y, then RUN the program again and answer Y when asked if you wish to load from disk. You should now see the same graph displayed.

The Working Environment

Page 1



This article is based upon an extract from *The Working City* by David Lawrence. It is published by Souvenir Press and costs £1.50.



STONES HIDDEN ON THE ISLE OF WIGHT.

Yellow There are 41 of them.

Pink 41 real diamonds hidden somewhere on the island, just waiting to be discovered.

Blue 40 diamonds set in Stoneywars boulders. And the great Wight Eye itself, the most fabulous diamond of them all.

Yellow Only one man knows where they are hidden, and he's not saying.

Pink All that he has to say he's said already in the Spirit of the Stones.

Blue It's a book and a computer game.

Yellow And together they reveal the whereabouts of all those diamonds.

Pink But – and here's the catch...in the form of riddles and clues.

Blue Solve the puzzles in the program and you'll find it easier to solve the puzzles in the book.

Yellow Solve the puzzles in the book and one (or more) diamonds can be yours.

Pink Forever. And ever.

Blue You don't even have to go to the Isle of Wight. (Though should you want to, we've put a bargain holiday offer in every pack).

Yellow You simply work out where the diamonds are, and post off your claim.

Pink Whoever discovers

a diamond can also claim his or her share of the Royalty Fund.

Blue This grows with every copy sold up to a maximum of £1 million.

Yellow The Spirit of the Stones book is a great read.

Pink The Spirit of the Stones software is great entertainment.

Blue But they're much more than that.

Yellow They're an adventure.

Pink A fascinating tale of mystery and imagination.

Blue A voyage of discovery on the Isle of Wight.

Yellow A voyage of discovery

into an unknown world of poltergeists, unholy spirits, banshees, mandibores and demons.

Pink The Spirit of the Stones is as entertaining as it can be rewarding. And like all of our software, it has been specifically designed to get the best out of Commodore hardware.

Blue You can't choose better.

Yellow Commodore software is costs no more, even though there's more to it.



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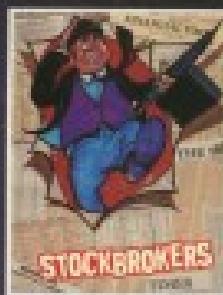
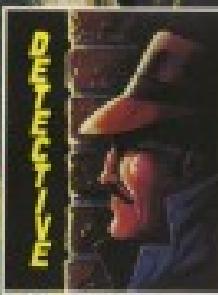
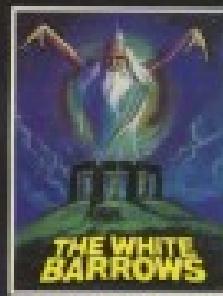
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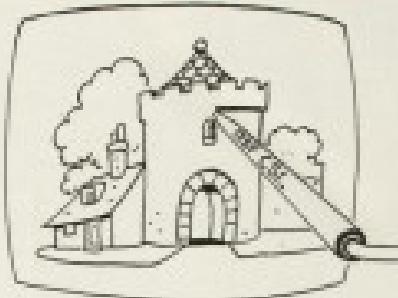
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CompuNet is up and running — but at what cost to the user?

A first impression of Commodore's network system by John Cochrane — can you afford to join CompuNet? Or can you afford not to?

COMMODORE'S new CompuNet option is now on line, and the first users are finding their way around the service. Owners of the 64 can, for £200, get a CompuNet modem and one year's subscription to allow them to make full use of the facilities. Added bonuses designed to get the ball rolling have included free software and free mail service within CompuNet, competitions, and free facilities to leave messages and programs in the public message area. By the time that you read this however some of these offers will have ended. The free software includes Versions for Friend, Commodore claims that their CompuNet modem can be used to give full access to Friend and Microsoft, although you will have to pay additional subscription charges for these.

Telephone

But what is CompuNet and what does it do? Essentially it is a telephone-based commercial system which allows a Commodore 64 to be used to talk to a central mainframe computer, and access some of the facilities of that computer. These facilities presently consist of a series of software, both commercial and C64, either free or on credit, information on a range of topics available in various areas; blank sessions on which you can leave messages for others; and private messaging. The system is a commercial one, that is, it is set up to make money and many of the services must be paid for. You are allocated a £20 credit limit when you register as a user, but the service could cost you more than this amount if you are not careful. Commodore has however tried to cover the many users and budgets by setting up a number of alternative services with different charge rates. Commodore



software can be bought and immediately transferred to your own machine, although you may need to leave the CompuNet modem attached to your machine in order to run the software once you have bought it. A service called The Jungle is a relatively low-cost service which can, to a limited degree, provide a bulletin board with messages and answers on any topic. There are educational services, and so on.

"The structure of CompuNet is based on pages of text..."

The hardware for the 64 interface for other users to follow consists of a black box which plugs into the cartridge port and has a flat cable ending in a series 600 telephone plug, or instead has one of the new style phone jacks to use the standard. If you want to use the modem for talking to another 64 then you will need a double socket or a special connector so that you can use your ordinary phone at the same time. Inside the modem are two circuit boards, one to control the phone signals and to provide the interface hardware, and the other holds the 60064 and hardware to communicate with the 64. In principle, it should be possible to use the modem as a general-purpose device, to talk to existing phone-line services, although software is required for this and you will be restricted to 1200 baud services.

The structure of CompuNet is based on the idea of pages of text (called frames), much the same as those provided by Teletext. The frames are numbered and are used as directories to further information

or to the other CompuNet facilities. For example, Frame 1 gives you the main menu. It tells you that Frame 100 will tell you more about CompuNet, 200 is for news and software, 300 is the shopping centre, 400 is money masters, and so on. If you select Frame 110 then you are shown a further directory, Frame 119 for information on how to register on CompuNet, 120 is a user guide, 140 information on the CompuNet Central server (posting messages) — you get the idea. Each directory gives you more information on a given topic until you reach a specialised frame which offers the final product. The final product may be a document of several frames, which is transferred to your machine and held in memory, you can look at each frame as you wish and save the whole document on tape or disk for looking at later. Most of the help and guide information is available in this manner. Some of these documents may be only available at a price, in order to receive them you must be properly registered and must agree the price before using what it is that you are purchasing.

Commercial

There are several forms of software available. Commercial software from Commodore and other software houses can be bought at special rates and home-grown software can be bought and sold. Again, you don't know what you are getting until you have paid for it. CompuNet is trying to ensure that the software sold gives value for money by threatening to disconnection anyone caught abusing the service, and by giving buyers a chance to vote on the software which has just been bought. These votes are added and displayed for all to see — high votes should mean that the software

has proved popular with previous buyers. You can pay less if you buy the software and you have only one copy per software item. The problem here is that, at present, Computer does not tell you how many people in total have bought the software. Then you can not know what proportion of buyers have been pleased with their purchases. Perhaps the system will be changed though. Computer is asking for suggestions for additional services and improvements to those existing.

Software is available under several headings, including educational and business software. Computer is keen to build up both these potential links and is attempting to set up additional services to support such things as business-information services, travel-agency facilities, and software for use in schools and beyond.

HAUD

Another form of software available on Computer, and this may become some people's main reason for getting the thing, is software which loads and runs immediately. There are two examples of how this works. When you first log in some software is automatically loaded into your machine to make sure that you can make full use of all the latest facilities. This, there should be little chance of your hardware going out of date. The second example is a program called MUD (Multi-User Dungeon), developed at the University of Essex. This is a sophisticated adventure-type program which takes the whole thing a

stage further by allowing up to 12 people to access the thing at the same time. Not only do you have the opportunity to run around a weird land, finding treasures, fighting beasts, finding rewards about the place, but you also stand a good chance of meeting another player.

All this happens while you are still connected through Computer.

Other services provided by Computer include public and private message sending, and classified advertising. The private message sending is achieved by letting you leave a message, in the form of your own home-made frame, with a named recipient. Only the person that you have named can read the message, just like sending a message through the post. Computer even calls the process of naming the recipient 'can be more than one if you want' "creating an envelope". Public messages can benefit in a number of ways, if you have some comment to make on a problem you can set up a message and leave it for all to see. If you come back to the system some time later perhaps someone else will have read your message and replied. A special reduced postal messaging service lets you enter personal adverts — you know the kind of thing, "Bicycle wanted in exchange for disk drive".

So, all in all, how does the service shape up and how much does it cost? Currently there is a strong commercial influence, which hopefully will become less noticeable as more users start to make their own contributions through bulletin and so on. Computer has allowed for many types of

user, with many types of requirement. After the first couple of sessions most users will probably find the sections which most interest them and stick to them. There are opportunities to request changes etc., or additions etc., facilities provided by the system should prove. One aspect which I personally do not like at all is the way that everything has been given a business name. The open area is called The Jungle. There is a sort of horizontal menu at the bottom of the screen which allows you to select pose choices, this is known as a Dashboard — it took me about four hours to work out what a Dashboard was. This particular type of commercial nomenclature does not help in getting to understand the system.

COMPLEX

As regards costs, "complex" is the word which springs to mind. Most things cost something; software is simple in that the price is displayed before you buy. Connection charges vary with time of day, extra charge at night, £1.00 per hour during the day plus 12.5p per hour any time if you were 1200/1300 connect. Charges for leaving messages or programs are typically 10p per frame (or per 1K program per day). Programs or message rates cost 40p or 50p cent of the asking price. So try and work that out for you if you can — my only advice is to think before you commit yourself. It may become a good system, but Computer intends to make money out of it, and we all know the level of revenue the company is used to. □

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Finding a new home for your machine code

Useful routines for relocating machine code will ease the transition from Basic. M C Hart explains

AFTER PROGRAMMERS have made the transition to machine-code, one question when planning a program is "Where shall I locate the code?" One favoured location is the cassette buffer locations 102-1048 on the C-64 or the area from location #C000-HCFFF (#8000-33347 decimal). Sometimes, though, you may need to have two machine code routines in memory at

the same time and if they were both written to occupy the same space then use of them will need to be relocated.

If the programs consist entirely of relative branches such as #HJ +10 or of absolute jumps, then no problems will occur. Other types of code do not relocate so easily, however. If you have written some code which contains references to subroutines within itself, then those refer-

encing code will not transfer over without amendment as they refer to absolute addresses in RAM. In such cases, it would be useful to have a routine which computes the new realistic location before the data is POKE'd into position. This is called a RELOCATING LOADER and one is presented here which is suitable for any C64 machine.

The principle behind a relocating loader

HEXIT listing

```

1 FOR J=6280T0931:REHDX:POKEJ,N:NEXT
2 END
10 DATA 32,115,0,201,36,289,42,32
11 DATA 82,3,72,32,82,3,179,184
12 :DATA 32,289,189,76,116,164,32,97
13 :REM VIC 32,205,221,76,116,196,32,97
14 :REM 82 32,217,228,76,137,195,32,97
15 :REM 84 32,131,287,76,255,179,32,97
16 :
17 DATA 3,191,19,19,19,199,32,32
18 DATA 97,3,181,35,96,32,115,0
19 DATA 261,38,41,15,184,2,185,8
20 :DATA 96,32,139,173,32,247,183,179
21 :REM VIC 96,32,138,289,32,247,215,179
22 :REM 82 96,32,139,284,32,219,214,179
23 :REM 84 96,32,132,189,32,45,201,179
24 :
25 DATA 152,72,72,138,72,72,169,36
26 DATA 32,218,255,104,32,144,3,184
27 DATA 32,149,3,104,32,144,3,184
28 DATA 32,149,3,96,24,186,186,186
29 DATA 196,41,15,24,185,48,281,58
30 DATA 144,2,185,6,32,218,255,96
31 :
32 REM FOR PETZ (82 & 84) MAKE 115 IN
33 REM LINES 18-19 INTO 112
34

```

is essentially quite simple. If we know that the location of a sub-routine is 20 bytes on from the start of the program, then the location of the subroutine should consist 20 bytes on from the start of the program whenever it happens to be located. All that we have to do is to identify the relevant subroutine calls, calculate some code which contains the offset from the start of memory, and then compute and POKE in the new low and high addresses of the subroutines.

The routine HEXIT provides a hexadecimal calculator, so the demodulation routine is actually useful. To use it, just merely type:

HFS Location, --

STS Location, --

If the first character is a \$ sign then the number will be converted to decimal. If there is no \$ sign then the number is assumed to be decimal and will be converted to its hexdecimal equivalent. This is a bonus, for the real purpose of the article is really to demonstrate how relocating leaders actually work. If you like, you can use a slightly different syntax—making the variable DEC into START+? and the variable HEX into START+?H, one can then say SYSDRIVE--- or SYSDEV---. Note the absence of a comma in this case.

Relocators

If you study the disassembly of HEXIT, then you will notice that the right pairs of bytes that are considered are references to subroutines contained within the body of the code. There are actually four subroutines each of which is called twice. The first routine is HFS12 and, counting from zero, this is located 22 bytes from the start of the program.

Similarly, subroutine HFS11 is located 17 bytes from the start, subroutine HFS00 is located 209600 bytes from the start and subroutine HFS05 is 59 bytes from the start.

Once we have computed (manually) the offset from the start of the program, then everything else is made on a relocating that we desire to relocate we replace the low byte of the subroutine call with the offset, expressed as a NEGATIVE number. For example, if we used the HEXIT + RELOCATE BASIC loader, then you will see that if the first subroutine call comes right at the beginning of the second line, therefore we replace the low byte of decimal 82 with -22 and repeat the same procedure whenever necessary throughout the program.

When the relocating is complete HEXIT + RELOCATE will actually run, then the types of the subroutine calls that we need to recompute are indicated by being negative numbers. Notice that the variable S holds the new start location of the code and any positive integer is POKE'd straight into memory. If a negative number is indicated then line 2 is activated. This ALDSH the offset onto the new start location (8 minus a negative number equals 8 plus that number) 11Y is the low byte of the new subroutine call and this is POKE'd after computation. The high byte is computed and the data pointer moved on

HEXIT + Relocate listing

```

1 0=49152:H=104
2 FORJ=8 TO 8+H-1:READ X: IF X=0 THEN 4
3 X=8-X: V=X-HINT(X/256)*256:POKE J,V:X=0/256
4 POKE J,X:NEXT
5 DATA 32,113,0,201,36,208,42,32
6 DATA -22,0,72,32,-22,0,170,104
7 DATA 32,295,189,76,116,164,32,-37
8 DATA 0,18,18,18,18,133,35,32
9 DATA -37,0,181,35,36,32,115,0
10 DATA 201,38,41,15,144,2,105,0
11 DATA 96,32,138,173,32,247,180,178
12 DATA 152,72,72,138,72,72,169,36
13 DATA 32,-89,0,104,32,-84,0,104
14 DATA 32,-89,0,96,24,106,106,106
15 DATA 186,41,15,24,105,48,201,58
16 DATA 144,2,195,6,32,210,255,96
22 DATA

```

Turn to page 66 for the HEXIT assembly.

by a READ Z and the loop variable incremented by a J = J + 1. The high byte is then POKE'd by the normal operation of line 4. Notice that although only one value is inserted into the code, i.e., the negative value of the offset, two new values are generated from this, the low and high bytes of the computed sub-routine location.

Obviously, in this approach one has to have a variable holding the value of the start of this in this case and it is probably convenient to have a value specifying the total number of bytes in the program (50). In order to relocate the code, all that is needed is to put the desired location for the start of the code into the variable S in line 1.

A relocating leader like the one just described makes one's routines much more versatile. Just remember that one has to start counting the bytes from 0 at the start of the program, and all of your programs should relocate without difficulty.

The HEXIT loader is set up, by default, for a Commodore 64. As there are calls into HFSM, the routine will need adapting for other machines. This is quite easy to do. In place of line 12 (tagged by the double colon ::) put the relevant line for the VIC, PET BASIC 2 or PET BASIC 4. Do likewise for line 20.

In addition, PET owners (B2 and B4) should ensure that the value of H is in line 10/18 reads 112. ■

HEXIT disassembly

0390 00 70 00	JSR #0070	
0397 C9 24	CMP #0024,	
03A1 00 2A	SUB #002A	
03A3 00 2E 00	JSR #002E	: Replace with low/high bytes of (START + 2E)
03A5 00	PIN	
03A7 00 2E 00	JSR #002E	: Replace with low/high bytes of (START + 2E)
03A9 FA	TAN	
03AB 00	PLA	
03AC 00 CD 8D	JSR #00CD	
03AF 00 74 A4	JMP #0074	
03B0 00 21 00	JSR #0021	: Replace with low/high bytes of (START + 21)
03B5 00	REL	
03B6 00	REL	
03B7 00	REL	
03B8 00	REL	
03B9 00 23	STW #0023	
03B9 00 21 00	JSR #0021	: Replace with low/high bytes of (START + 21)
03B9 00 23	ADC #0023	: Replace with low/high bytes of (START + 23)
03B9 00	RTS	
03C0 00 70 00	JSR #0070	
03C4 C9 04	CMP #0004	
03C6 00 0F	AND #000F	
03C8 00 02	ECC #0002	
03CA 00 00	ADC #0000	
03C8 00	RTS	
03D0 00 00 00	JSR #0000	
03D7 00 07 07	JSR #0077	
03D8 FA	TAN	
03D9 00	TAN	
03D9 00	PIN	
03D9 00	PIN	
03D9 00	TAN	
03D9 00	PIN	
03D9 00	PIN	
03D9 00 24	UDR #0024	
03D9 00 00 FF	JSR #FF00	
03D9 00	PLA	
03D9 00 2E 00	JSR #002E	: Replace with low/high bytes of (START + 2E)
03D9 00	PLA	
03D9 00 21 00	JSR #0021	: Replace with low/high bytes of (START + 21)
03D9 00	PLA	
03D9 00 2E 00	JSR #002E	: Replace with low/high bytes of (START + 2E)
03D9 00	PLA	
03D9 00 21 00	JSR #0021	: Replace with low/high bytes of (START + 21)
03D9 00	PLA	
03D9 10	CLC	
03D9 00	ROR	
03D9 00 0F	AND #000F	
03D9 10	CLC	
03D9 00 00	ADC #0000	
03D9 C0 00	CMP #0000	
03D9 00 00	ECC #0000	
03D9 00 00	ADC #0000	
03D9 00 00 FF	JSR #FF00	
03D9 00	RTS	

COMMODORE SOFTWARE FILE

Disassembler

Mark Thompson from Bedford sends this program for the 64 or VIC.

DISASSEMBLER A simple disassembler for the VIC or 64. It will disassemble any section of memory and list it in standard 6502 mnemonic form. The workspace loop of the program, lines 140 to 220, has been kept as short as possible, so there is no stack handling.

The start address specified for the disassembling must always contain a valid

memonic op-code, either an address or an operand, or you will get "out of data slot" in 120. The listing can be sent to screen or printer.

On running, you will be prompted for a filename. This is optional. Second, select the desired output device number: Third, type H or D for hex or decimal mode. Finally, enter start and end addresses of the location to be disassembled (16-bit hex or decimal according to mode).

The program works by words picking the address to 16' then searching the data space for the op-code of the same value. The memory location address is then converted into hex if necessary and displayed, along with the mnemonic read into the data space into MS. The third value read from the data space is NC, which denotes addressing mode. This takes points from the appropriate instruction which indicates the operand and address and returns it in CPS which is then printed.

The address counter then has N added to it to point the next op-code.

Use the disassembler to study the ROM subroutines in your machine — for example for keywords such as LOAD. The Programmers Reference Guide contains a comprehensive memory map.

```

1 REM*****
2 REM*****
3 REM***** .DISASSEMBLER. ****
4 REM***** BY ****
5 REM***** MARK THOMPSON ****
6 REM*****
7 REM*****
10 INPUT "[CLR] [RVS] FILENAME[OFF]";FS
20 INPUT "[DOWN] [RVS] OUTPUT DEVICE NO.[OFF]";D
30 FS=FS+CHR$(13)+CHR$(10)+CHR$(10)
40 OPENFS,D,"FS"
50 INPUT "[DOWN] (RVS) SELECT HEX OR DECIMAL(H OR D) [OFF]";ED
60 IFPEEK"H"ADR$<>"D"THENSD
70 IFPEEK"H"THEMNODE=0
80 IFPEEK"D"THEMNODE=1
90 INPUT "[DOWN] (RVS) START ADDRESS[OFF]";EAS
100 INPUT "[DOWN] (RVS) END ADDRESS[OFF]";EAE
110 ONNODE+1GOSUB20010:20080
120 IFSD=0:THENPRINT"(DOWN) ADDRESS ERROR":FORDE=0TO2000:NEXT:GOTO90
130 PRINT"(CLR)":RA=0A
140 P=PEEK(A)
150 READC,MS,N:IPEEK<>PTHEN150
160 RESTORE:ONNODE+1GOSUB20020:20030:REM HEX,DEC ADDRESS DECODE
170 PRINTS,AS,MS," ";:IFNODE=0:THEN>>170:THENPRINTS,"":REM 1 GROWS
HEX MSB
180 ONNODE+1GOSUB20040:20050:20060:REM CALCULATE OPERAND
190 PRINTS,CPS
200 A=A+H:REM DUMP ADDRESS COUNTER TO NEXT MNEMONIC
210 IFSD=0:THENPRINTS":CLOSES:END
220 GOTO140
20060 REM HEX-DEC S/R PASS HD$,GET RD
20061 HD=16*(ASC(HD$)-48+(ASC(HD$)>4)*7)+(HD$%RIGHTS(HD$,1))
20062 HD=HD+ASC(HD$)-48+(ASC(HD$)>4)*7
20063 RETURN
20010 REM DEC-HEX S/R PASS DS,GET DS$
20011 DS=CHR$(INT(DH/16)-(INT(DH/16)>9)*7+48)+(DH-DH-INT(DH/16))*16
20012 DS=DS+CHR$(DE-(DE>9)*7+48)
20013 RETURN

```




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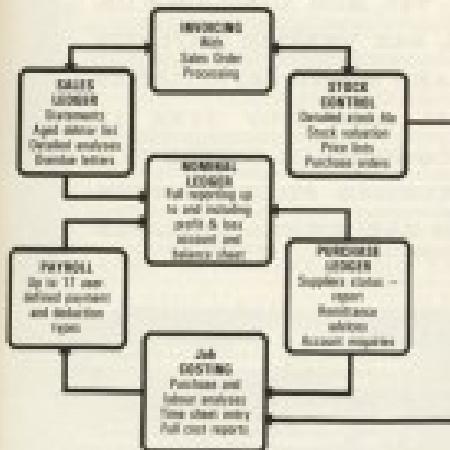
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99 RETURN
100 FORJ=0TO4:POKE2048,P+H(J):V=V-1:00SUB20-00SUB210:NEXTJ
101 FORJ=5TO8:POKE2048,P+H(J):V=V-1:00SUB20-00SUB210:NEXTJ:RETURN
102 FORJ=10TO13:POKE2048,P+H(J):V=V-1:00SUB20-00SUB210:NEXTJ
103 FORJ=14TO17:POKE2048,P+H(J):V=V-1:00SUB20-00SUB210:NEXTJ:RETURN
104 FORJ=18TO24:POKE2048,P+H(J):IFX=0THENPEEK(V+16)=1THENPOKEV+16,0:0=256
105 X=X-1:00SUB20-00SUB210:NEXTJ:RETURN:REM SPRITE LEFT
106 FORJ=25TO31:POKE2048,P+H(J):IFX=255THENPEEK(V+16)=0THENPOKEV+16,1:X=-1
107 X=X+1:00SUB20-00SUB210:NEXTJ:RETURN:REM SPRITE RIGHT
108 B=NOTPEEK(1562028)AND15:REM JOYSTICK CHECKING ROUTINE
109 IF(BAND1)THEHOSUB170
110 IF(BAND2)THEHOSUB198
111 IF(BAND4)THEHOSUB110
112 IF(BAND8)THEHOSUB130
200 GOTO150
210 POKEV,X:POKEY+L,V:RETURN:REM POSITION SPRITE
220 PRINT"J":REM CLEAR SCREEN
225 V=53248:X=158,Y=158:DIMU(35):REM SET UP VARIABLES AND ARRAYS
230 POKEY+21,1:POKEY+32,7:POKEY+33,1:POKEY+33,12:POKEY+28,9:POKEY+22,0
235 POKEY+23,1:POKEY+29,1:POKE2048,129:REM SET UP SPRITE
240 P=155:PRINTCHR$C140;"XXXXXXXXX FLIP,~'N THE M-----MAN."
245 FORJ=0TO17:FORI=0TO63:RERD
250 FORI=0TO1:REND:W(I,J)=E:NEXTJ:REM SET UP SPRITE DATA
255 FORJ=0TO1:RIDGE:W(I,J)=E:NEXTJ:REM SET UP SPRITE ORDER
260 FORI,X:POKEY+1,Y:00T0150:REM POSITION INITIAL SPRITE
499 REM UP IMAGE 1
500 DRTRO,126,0,0,126,0,0,126,0,0,126,0,0,126,0,0,24,0,0,126,0
505 DRTRO,126,0,0,126,0,0,126,0,0,60,0,0,60,0,0,36,0,0,36,0
510 DRTRO,32,0,0,32,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
515 REM IMAGE 2
520 DRTRO,126,0,0,126,0,0,126,0,0,126,0,0,126,0,0,24,0,0,126,0
525 DRTRO,126,0,0,126,0,0,126,0,0,60,0,0,60,0,0,36,0,0,36,0
530 DRTRO,36,0,0,32,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
535 REM IMAGE 3
540 DRTRO,126,0,0,126,0,0,126,0,0,126,0,0,126,0,0,24,0,0,126,0
545 DRTRO,126,0,0,126,0,0,126,0,0,60,0,0,60,0,0,36,0,0,36,0
550 DRTRO,36,0,0,36,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
555 REM IMAGE 4
560 DRTRO,126,0,0,126,0,0,126,0,0,126,0,0,126,0,0,24,0,0,126,0
565 DRTRO,126,0,0,126,0,0,126,0,0,60,0,0,60,0,0,36,0,0,36,0
570 DRTRO,36,0,0,42,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
575 REM IMAGE 5
580 DRTRO,126,0,0,126,0,0,126,0,0,126,0,0,126,0,0,24,0,0,126,0
585 DRTRO,126,0,0,126,0,0,126,0,0,60,0,0,60,0,0,36,0,0,36,0
590 DRTRO,36,0,0,36,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
595 REM DOH IMAGE 1
600 DRTRO,126,0,0,182,0,0,66,0,0,90,0,0,90,0,0,126,0,0,24,0,0,126,0
605 DRTRO,126,0,0,126,0,0,126,0,0,60,0,0,60,0,0,36,0,0,36,0
610 DRTRO,32,0,0,32,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
615 REM IMAGE 2
620 DRTRO,126,0,0,192,0,0,66,0,0,90,0,0,90,0,0,126,0,0,24,0,0,126,0
625 DRTRO,126,0,0,126,0,0,126,0,0,60,0,0,60,0,0,36,0,0,36,0
630 DRTRO,36,0,0,32,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
635 REM IMAGE 3
640 DRTRO,126,0,0,192,0,0,66,0,0,90,0,0,90,0,0,126,0,0,24,0,0,126,0
645 DRTRO,126,0,0,126,0,0,126,0,0,60,0,0,60,0,0,36,0,0,36,0
650 DRTRO,36,0,0,36,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
655 REM IMAGE 4
660 DRTRO,126,0,0,192,0,0,66,0,0,90,0,0,90,0,0,126,0,0,24,0,0,126,0
665 DRTRO,126,0,0,126,0,0,126,0,0,60,0,0,60,0,0,36,0,0,36,0
670 DRTRO,36,0,0,42,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
675 REM IMAGE 5

```

Breakthrough

The following terms have been defined:

BREAKTHROUGH is a version of the old *Breakthrough* for the unexpanded Vic. In this version you get an even better, more complete breakdown of the game.

Ind every time you break through the wall. The higher the levels, the more points you score. You start with seven lives, and if you beat the high score you hear a cue


```

2210 PRINT#11HIT IN KEY TO START*
2220 GETRFN:IFRH="" THENG220
2230 GOTO220
2240 FOR I=1 TO 2000
2250 FORNEXTI:READ POKEI+1,0 FORDC FORT=1TOC NEXTT:HEXTA
2260 PRINT"PLEASE ENTER YOUR NAME":INPUTHF HS=V RETURN
2270 DATA R,M,E,-1,-Q,V,E,R
2280 DATA135,480,175,280,195,280,287,280,215,540,0,0
2290 IFPEKH>P>=180717879411:100 FORT=1TO1000:HEXT:POKEI,0
2300 IFPEKH>P>=180818079411:100 FORT=1TO1000:HEXT:POKEI,0
2310 IFPEKH>P>=180919079411:100 FORT=1TO1000:HEXT:POKEI,0
2320 IFPEKH>P>=181019079411:100 FORT=1TO1000:HEXT:POKEI,0
2330 POKEI+1,125:FORTR=1TO1000:HEXT:POKEI+1,0 POKEP,22:GOTU460

```

Space Mines

Steve Hughes sends this program for the

unexpanded VIC-20
LAST MONTH we published the first version of this program, which gave the instructions and set up the screen.

Here is the continuation of Space Mines.

You pilot your ship to a safe landing with a joystick, avoiding the mines. On the way up you can scan them for extra points, and dock with the mother ship. Watch out, though, for the deadly Black Mine.

```

3 POKE32,27:POKE56,27:POKE31,130:POKE51,132:CLRFHT:PRINT"2"
4 V2=98875 V3=V2+3 V4=V1-1 POKEY+1,28 L=5
5 POKEY,15:V=22 U=-22 POKE59,128:POKE198,-8
6 S1=37129 S2=37134 RH=37137 RB=37152:POKE1,-8:POKE2,127:GOT0590
7 POKEV2,0 POKEV4,0 POKEV,15:GOT02900
80 GOT03900
81 GOT04000
100 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
110 FORT=81017979E1+80/590 PRINT"THELITR0<190L8:HEXT
120 RETURN
500 PRINT"XXXXXXXX BY KEVIN HUGHES"
501 PRINT"XXXXXXXX C > LEFT OR RIGHT"
502 PRINT"XXXX OR A JOYSTICK"
610 PRINT"XXXXXXXX HIT A KEY TO START"
620 GETRFN:IFRH="" THENG220
630 GOT02900
2000 POKE26939,255:IF I=3THEH1=0:GOT0600
2001 1PL=80RL,0THEPOKEV2,0:GOT06100
2002 Q=32 0>0 F=1:IFPEHV>1,0 PRINT"OVERSCORE":GOT" LIVES",L"
2010 FORT=81017979E1 PRINT"RSB" R=7:HEXT
2020 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX":R=INT(RND(1)*8)+1:PRINTRDC,"THE"
2040 PRINT"RSB":FORT=81017979E1:T=INT(RND(3)*17)+1:PRINTRDC,"THE"
2050 PRINT"RSB":HEXT
2060 PRINT"RSB" R=7:HEXT
2070 PRINT"RSB":PRINT:PRINT:FORTR=81017979E1:T=INT(RND(3)*18)+1:PRINTRDC,"RSB":HEXT
2110 FRS0118000D8=0THEH1=1:GOT02000
2120 LPSC0120000D8=0THEH1=1:GOT02000
2130 T=INT(RND(1)*15)+1
2140 PRINTRDC,"RSB":R=9 C=9 GOT0600
2009 RH="":(GETRFN:IFRH=""&RDY=22)THENG2020
2005 IFRH="R" THEH1=22:U=22:PRINT"RSB" R=7:HEXT
2006 IFRH="L" THEH1=1:U=1:PRINT"RSB" R=7:HEXT
2007 IFRH="U" THEH1=0:U=0:PRINT"RSB" R=7:HEXT
2008 IFRH="D" THEH1=1:D=1:PRINT"RSB" R=7:HEXT
2009 IFRH="":THEH1=P+1:D=-1
2010 IFRH="":THEH1=0:D=0
2011 GOT03900
2012 GOT03940
2013 GOT03990
2014 IFP=Y:POKEV2,200:POKEV2,240
2015 POKE75004PH=0,0:IFPEKX<1600>P:IPo=STHEHP>P-22
2016 POKE75004P,310>0
2017 POKEV2,7000:POKEV2,240:POKEV2,0
2018 IFP=THEH1,L=1:GOT06200
2019 IFP=STHEHP>S0+10,J=1,I=1:POKEV2,220:FORC=810160:HEXTU:POKEV2,0:GOT1050
2018 IFP=STHEH1,S=0,I=1:GOT06200
2019 IFP=00000>3000=0THEH1,L=1:GOT06200
2020 IFP=192 THEN :POKEV2,150:FORC=810160:HEXTU:V=22:U=22:GOT0580
2021 IFP=0192:V=22:U=22:GOT02140
2022 U=192:V=22:GOT02140
2023 GOT03900:GOT0600
2024 PTH=192:GOT0600

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Maths Test

THIS PROGRAM will give you all the rules of mathematics and culture they speak of disillusion. It is recommended that you take

youngsters skipping their nudes, as just by subjects who want to keep themselves in shape.


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117 IF R=2 AND B=2 THEN 141
118 IF R=2 AND B=3 THEN 142
119 IF R=2 AND B=4 THEN 142
120 IF R=2 AND B=5 THEN 144
121 IF R=3 AND B=1 THEN 145
122 IF R=3 AND B=2 THEN 146
123 IF R=3 AND B=3 THEN 147
124 IF R=3 AND B=4 THEN 148
125 IF R=3 AND B=5 THEN 149
126 IF R=4 AND B=1 THEN 150
127 IF R=4 AND B=2 THEN 151
128 H=30: IF R=4 AND B=3 THEN 152
129 H=45: IF R=4 AND B=4 THEN 153
130 H=60: IF R=4 AND B=5 THEN 154 END
131 FOR C=1 TO 10: A1=INT(RND(0)*25): A2=INT(RND(0)*25): GOTO 160
132 FOR C=1 TO 10: A1=INT(RND(1)*41)+11: A2=INT(RND(1)*41)+11: GOTO 160
133 FOR C=1 TO 10: H1=INT(RND(1)*25)+11: H2=INT(RND(1)*25)+11: GOTO 160
134 FOR C=1 TO 10: B1=INT(RND(1)*25)+11: B2=INT(RND(1)*25)+11: GOTO 160
135 FOR C=1 TO 10: B1=INT(RND(1)*41)+11: B2=INT(RND(1)*41)+11: GOTO 160
136 FOR C=1 TO 10: B1=INT(RND(1)*41)+11: B2=INT(RND(1)*41)+11: GOTO 160
137 FOR C=1 TO 10: B1=INT(RND(1)*41)+11: B2=INT(RND(1)*41)+11: GOTO 160
138 FOR C=1 TO 10: B1=INT(RND(1)*41)+11: B2=INT(RND(1)*41)+11: GOTO 160
139 FOR C=1 TO 10: B1=INT(RND(1)*41)+11: B2=INT(RND(1)*41)+11: GOTO 160
140 FOR B=1 TO 10: B1=INT(RND(1)*25)+14: B2=INT(RND(0)*15): GOTO 170
141 FOR B=1 TO 10: B1=INT(RND(1)*25)+14: B2=INT(RND(1)*15): GOTO 170
142 FOR B=1 TO 10: B1=INT(RND(1)*25)+14: B2=INT(RND(1)*15): GOTO 170
143 FOR B=1 TO 10: B1=INT(RND(1)*25)+14: B2=INT(RND(1)*15): GOTO 170
144 FOR B=1 TO 10: B1=INT(RND(1)*15)+14: B2=INT(RND(1)*15)+14: GOTO 170
145 FOR E=1 TO 10: C1=INT(RND(1)*11): C2=INT(RND(0)*11): GOTO 180
146 FOR E=1 TO 10: C1=INT(RND(1)*11): C2=INT(RND(0)*11): GOTO 180
147 FOR E=1 TO 10: C1=INT(RND(1)*11): C2=INT(RND(0)*11): GOTO 180
148 FOR E=1 TO 10: C1=INT(RND(1)*15): C2=INT(RND(0)*15): GOTO 180
149 FOR E=1 TO 10: C1=INT(RND(1)*15): C2=INT(RND(0)*15): GOTO 180
150 FOR F=1 TO 10: T=INT(RND(1)*6)+1: P=INT(RND(2)*15): GOTO 190
151 FOR F=1 TO 10: T=INT(RND(1)*6)+1: P=INT(RND(2)*15): GOTO 190
152 FOR F=1 TO 10: T=INT(RND(1)*6)+1: P=INT(RND(2)*15): GOTO 190
153 FOR F=1 TO 10: T=INT(RND(1)*6)+1: P=INT(RND(2)*15): GOTO 190
154 FOR F=1 TO 10: T=INT(RND(1)*15)+4: P=INT(RND(2)*15): GOTO 190
155 POKE53281,2: PRINT"*****CORRECT*****": GOTO 160
156 FORM#1TO1000:HEXT#POKE53281,6: PRINT"3": GOTO165
157 PRINTC1"3": INPUT X
158 H=R+42
159 IF H>J: GOTO155
160 POKE53281,3: PRINT"*****CORRECT*****": GOTO155
161 FORM#1TO1000:HEXT#POKE53281,6
162 PRINTC1"3": INPUT X
163 HEXT C: GOTO200
164 FORM#1TO1000:HEXT#POKE53281,6
165 PRINTC1"3": INPUT X
166 HEXT C: GOTO200
167 POKE53281,2: PRINT"*****WRONG*****": GOTO160
168 FORM#1TO1000:HEXT#POKE53281,6: PRINT"3": GOTO 175
169 PRINTC1"3": INPUT X
170 H=31-B2
171 H=B1-B2
172 IF H<0: GOTO167
173 POKE53281,3: PRINT"*****CORRECT*****": GOTO167
174 FORM#1TO1000:HEXT#POKE53281,6
175 PRINTC1"3": INPUT X
176 HEXT D: GOTO 200
177 POKE53281,2: PRINT"*****WRONG*****": GOTO160
178 FORM#1TO1000:HEXT#POKE53281,6: PRINT"3": GOTO 185
179 PRINTC1"3": INPUT X
180 H=C1AC2
181 IF H>W: GOTO177
182 POKE53281,3: PRINT"*****CORRECT*****": GOTO177
183 FORM#1TO1000:HEXT#POKE53281,6
184 PRINTC1"3": INPUT X
185 HEXT G: GOTO200

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187 POKE3281,2 PRINT"XXXXXXXXXXXXXXXXXXXXXXEUROH"
188 FORM=1:T01000:NEXTM:POKE3281,6:PRINT"Z":GOTO190
189 RESTORE FOR EAD TO H REED PNEXT E
190 FORMH TO P REED PNEXT HIGHTER
191 DINTM PRINT"DIVIDE TURKEY":T INPUT K IF DON THEN 187
192 POKE3281,3:PRINT"XXXXXXXXXXXXXXXXXXXXXXCONNECT":S=9:=
194 FORMLTO1000:NEXTM:POKE3281,6
195 PRINT"DE"
196 NEXTP
197 PRINT"DE"
198 PRINTTRK7;"YOU SCORED "S" OUT OF 10"
199 FOR K=1 TO 1000 NEXT K
200 PRINT"DE"
201 PRINTTRK5;"DO YOU WANT ANOTHER GO(V/N)?"
202 GET B$ IF B$="Y" THEN 215
203 IF B$="N" GOTO 240
204 GOTO 203
205 PRINTTRK4;"CRAZY! BE LIKE THAT THEN I'M GOING" FOR
T=170,200,0:NEXTT:DY364720
206 10019 1,2,3,4,5,1,2,3,4,5,1,2,3,4,5,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,
7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47
207 10019 14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49
208 DINTM 6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,50,61,62,63,64,65,66,67,68,69,60,71,72,73,74,75,76,77,78,79,70,81,82,83,84,85,86,87,88,89,80,91,92,93,94,95,96,97,98,99,90,101,102,103,104,105,106,107,108,109,100,111,112,113,114,115,116,117,118,119,120,121,122,123,124,125,126,127,128,129,120,131,132,133,134,135,136,137,138,139,130,141,142,143,144,145,146,147,148,149,140,151,152,153,154,155,156,157,158,159,150,161,162,163,164,165,166,167,168,169,160,171,172,173,174,175,176,177,178,179,170,181,182,183,184,185,186,187,188,189,180,191,192,193,194,195,196,197,198,199,190,200,201,202,203,204,205,206,207,208,209,200,211,212,213,214,215,216,217,218,219,210,221,222,223,224,225,226,227,228,229,220,231,232,233,234,235,236,237,238,239,230,241,242,243,244,245,246,247,248,249,240,251,252,253,254,255,256,257,258,259,250,261,262,263,264,265,266,267,268,269,260,271,272,273,274,275,276,277,278,279,270,281,282,283,284,285,286,287,288,289,280,291,292,293,294,295,296,297,298,299,290,301,302,303,304,305,306,307,308,309,300,311,312,313,314,315,316,317,318,319,310,321,322,323,324,325,326,327,328,329,320,331,332,333,334,335,336,337,338,339,330,341,342,343,344,345,346,347,348,349,340,351,352,353,354,355,356,357,358,359,350,361,362,363,364,365,366,367,368,369,360,371,372,373,374,375,376,377,378,379,370,381,382,383,384,385,386,387,388,389,380,391,392,393,394,395,396,397,398,399,390,401,402,403,404,405,406,407,408,409,400,411,412,413,414,415,416,417,418,419,410,421,422,423,424,425,426,427,428,429,420,431,432,433,434,435,436,437,438,439,430,441,442,443,444,445,446,447,448,449,440,451,452,453,454,455,456,457,458,459,450,461,462,463,464,465,466,467,468,469,460,471,472,473,474,475,476,477,478,479,470,481,482,483,484,485,486,487,488,489,480,491,492,493,494,495,496,497,498,499,490,501,502,503,504,505,506,507,508,509,500,511,512,513,514,515,516,517,518,519,510,521,522,523,524,525,526,527,528,529,520,531,532,533,534,535,536,537,538,539,530,541,542,543,544,545,546,547,548,549,540,551,552,553,554,555,556,557,558,559,550,561,562,563,564,565,566,567,568,569,560,571,572,573,574,575,576,577,578,579,570,581,582,583,584,585,586,587,588,589,580,591,592,593,594,595,596,597,598,599,590,601,602,603,604,605,606,607,608,609,600,611,612,613,614,615,616,617,618,619,610,621,622,623,624,625,626,627,628,629,620,631,632,633,634,635,636,637,638,639,630,641,642,643,644,645,646,647,648,649,640,651,652,653,654,655,656,657,658,659,650,661,662,663,664,665,666,667,668,669,660,671,672,673,674,675,676,677,678,679,670,681,682,683,684,685,686,687,688,689,680,691,692,693,694,695,696,697,698,699,690,701,702,703,704,705,706,707,708,709,700,711,712,713,714,715,716,717,718,719,710,721,722,723,724,725,726,727,728,729,720,731,732,733,734,735,736,737,738,739,730,741,742,743,744,745,746,747,748,749,740,751,752,753,754,755,756,757,758,759,750,761,762,763,764,765,766,767,768,769,760,771,772,773,774,775,776,777,778,779,770,781,782,783,784,785,786,787,788,789,780,791,792,793,794,795,796,797,798,799,790,801,802,803,804,805,806,807,808,809,800,811,812,813,814,815,816,817,818,819,810,821,822,823,824,825,826,827,828,829,820,831,832,833,834,835,836,837,838,839,830,841,842,843,844,845,846,847,848,849,840,851,852,853,854,855,856,857,858,859,850,861,862,863,864,865,866,867,868,869,860,871,872,873,874,875,876,877,878,879,870,881,882,883,884,885,886,887,888,889,880,891,892,893,894,895,896,897,898,899,890,901,902,903,904,905,906,907,908,909,900,911,912,913,914,915,916,917,918,919,910,921,922,923,924,925,926,927,928,929,920,931,932,933,934,935,936,937,938,939,930,941,942,943,944,945,946,947,948,949,940,951,952,953,954,955,956,957,958,959,950,961,962,963,964,965,966,967,968,969,960,971,972,973,974,975,976,977,978,979,970,981,982,983,984,985,986,987,988,989,980,991,992,993,994,995,996,997,998,999,990,1001,1002,1003,1004,1005,1006,1007,1008,1009,1000,1011,1012,1013,1014,1015,1016,1017,1018,1019,1010,1021,1022,1023,1024,1025,1026,1027,1028,1029,1020,1031,1032,1033,1034,1035,1036,1037,1038,1039,1030,1041,1042,1043,1044,1045,1046,1047,1048,1049,1040,1051,1052,1053,1054,1055,1056,1057,1058,1059,1050,1061,1062,1063,1064,1065,1066,1067,1068,1069,1060,1071,1072,1073,1074,1075,1076,1077,1078,1079,1070,1081,1082,1083,1084,1085,1086,1087,1088,1089,1080,1091,1092,1093,1094,1095,1096,1097,1098,1099,1090,1101,1102,1103,1104,1105,1106,1107,1108,1109,1100,1111,1112,1113,1114,1115,1116,1117,1118,1119,1110,1121,1122,1123,1124,1125,1126,1127,1128,1129,1120,1131,1132,1133,1134,1135,1136,1137,1138,1139,1130,1141,1142,1143,1144,1145,1146,1147,1148,1149,1140,1151,1152,1153,1154,1155,1156,1157,1158,1159,1150,1161,1162,1163,1164,1165,1166,1167,1168,1169,1160,1171,1172,1173,1174,1175,1176,1177,1178,1179,1170,1181,1182,1183,1184,1185,1186,1187,1188,1189,1180,1191,1192,1193,1194,1195,1196,1197,1198,1199,1190,1201,1202,1203,1204,1205,1206,1207,1208,1209,1200,1211,1212,1213,1214,1215,1216,1217,1218,1219,1210,1221,1222,1223,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How many spots?

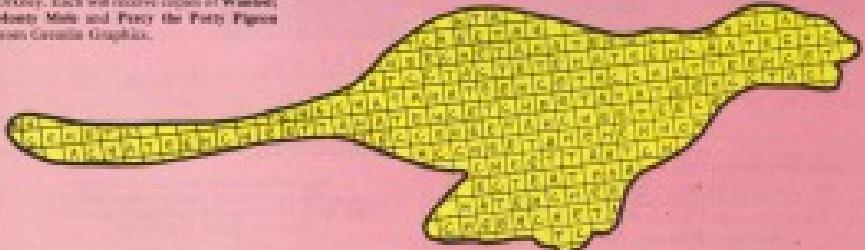
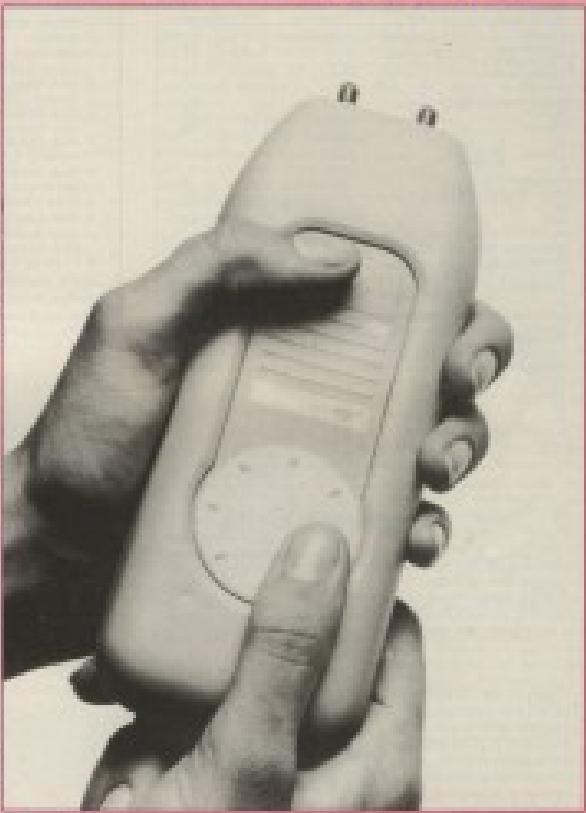
All you have to do is to look at the cheetah shown below, and tell us how many times you can spot the word CHEETAH hidden in it. You can read forwards, backwards or diagonally in a straight line. When you've counted up, put the answer on a POSTCARD with your name and address, and complete the instructions in an amazing and original manner in 11 words or less. Cheshire's RAT stands open for the competition results!

Competition closes on January 31. Results will be announced in our March issue. Normal competition rules apply. Post your entries to RAT Competition, Computer Horizons, 12/13 Little Newgate Street, London WC2.

The winners of Cheshire's Computer Graphics competition are: J O Collier of Stafford; C D Turner of Old Minsford; S Adams of York; C Day of Haywards Heath; G Thomas of Birkhead; A C Rutter of Mexborough; M D Chatterton of Stock-on-Trent; M Brookfield of Chelmsford; N Karmarkar of Peter Wimbley of Orkney. Each will receive copies of Wanted: Money Men and Freya the Petty Pigeon from Computer Graphics.

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Clowning around

Book: *1541 Fun Projects for Your Computer*

Author: Barbara Dehaven and Leslie Publishers Prentice-Hall
Price: \$19.75

Reviewer: Alan Flaverman

This book is, I suspect, intended to be read by someone considerably younger than yours truly. Even so, I think that most people, whatever their age, would find it worthy reading.

The introduction suggests that, should we be blessed with our 64, buying this volume will once more brighten our day. From "You'll be absolutely obsessed at once" with a Dungeon and Dragons-like rolling program, and you'll probably want to take full advantage of the innovative strategy and mouse games." I shall be neither obsessed nor taking advantage.

Practically speaking . . . a metric conversion and a comparison shopping program really make your life easier. I can just see all us old timers wheeling our pride and joy around the supermarket looking for the best value.

As the book is aimed with drawings of a clown (the author perhaps), I can only assume that it is intended for an extremely young audience. It is an American book that should have stayed on the other side of the pond. Want it to cost £1.75, it may easily have appealed to somebody, somewhere. But at £19.75 it is overpriced perhaps.

Instant sunshine

Book: *Power Apple Games for the Commodore 64*

Author: Alan Flaverman

Publisher: PowerPCW

Price: £2.95

Reviewer: Paul Bourne

This title might lead you to expect a book of programs which, strictly speaking, this is not. It is intended for people who are interested in writing their own games programs in BASIC, and not cut to teach the inexperienced programmers how this may be done. The idea is to produce either a "Knuckles versus the

Aliens" type of arcade game or a text adventure.

The arcade section begins by providing a "skeleton" listing and then gives a choice of options for putting flesh on the bare bones. These include a variety of sprite designs for both goodies and baddies, and a fairly comprehensive range of simple sound effects. The programs thus produced are well structured, though inevitably they end up in variations on the same theme. Nevertheless they are well presented and would be sure to inspire further experimentation.

The adventure section is slightly different, in that the listings provided produce just one game, although suggestions are made as to how it might be varied.

Alan Flaverman's book is unusual and interesting, and should provide both enjoyment and inspiration. It treats the subject simply but thoughtfully, and is good value for money at £2.95.

Publisher: Prentice-Hall

UK edition:

Price: £19.75

Reviewer: Jack Cade

This guide to the 1541 is the hard reference book I have read since Radio West's *Programming the PET/CBM*.

Using the DOS, diskette formatting, diskette organization, and an overview of the DOS and commentary on ROM routines are amongst the topics covered.

Other chapters include Disk Access Programming, which explains the use of block and memory read/write commands in a clear and understandable manner.

DOS protection is covered fairly fully, although some advanced protection methods are not mentioned.

Commodore's data encoding scheme is clearly explained, and sector headers are analyzed as part of the explanation. DOS error codes and messages are documented and explained in

expanded reading, especially if you have ever lost information on a diskette. Program listings are easy to understand, and corrected characters have been converted to readable form. There are programs to edit a disk and to create errors.

I have typed in several programs and have not found any that would not work. I recommend this book unreservedly to those who desire a thorough understanding of the 1541 disk drive.

Bad timing

Book: *Animation, Games and Sound for the Vic-20*

Author: Tony Fader

Publisher: Prentice-Hall

Price: £10.95

Reviewer: David Shepherdson

This American book is well bound and laid out, but it comes at the wrong time; its best market round would have shortly after the VIC-20 was launched!

The book can really be said to supplement the manual provided with the machine. The program examples given are usually short and simple, but are very fully and comprehensively explained, even to the extent of noting which keys to use to enter them — perhaps less comprehensively in places, as the explanations are larger than the programs they explain. Also, many of the programs are almost identical to some in earlier chapters, or even the same chapter. For instance, in Chapter Ten, 8 of the 12 programs are the same except that an eight-line PRINTed sentence changes (From a Christmas Card to a New Year Card to a Halloween Card and so on). As far as one is reader until the 2nd chapter, and the only POKES used are the sound, and those from the 11th chapter!

The local Appendix is included, covering Characters and screen/headers entries, but the most glaring omission is of UDF's. Not even a single mention.

In conclusion, a handy but slightly misleading book which may still appeal to you if you find the Reference Guide a bit dry. What more can be said about a book, including a program title like "One-Eyed Gorilla Moving Left"?



The 1541 finally explained

Book: *Inside Commodore 1541*

Author: Richard Dehaven and Crystal G. Neagle

detail.

The most important programs listed will allow you to move the 1541's read/write head easy where you want and read the next header passing over the head.

The screen display shows where the head is, what track and sector was read, and detects any read errors that were encountered.

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ANSWER BACK

Data on sprites

I KNOW that I can only display up to eight sprites at a time unless using raster interrupts, but how do I go about storing more than eight blocks of sprite data in memory?

Colin Gardner
Bridgwater
Somerset

THE EIGHT sprite pointers are normally at location \$0000 onwards (that is, the first eight bytes of the 1K screen memory). The range of each pointer is from 0 to 255, and therefore since each sprite takes 64 bytes these locations can point to any part of the 64K bank of memory currently in use by the Vic chip.

If banks 0 or 2 are used then you cannot place sprite definitions in the \$0000 image of the character set, and this will restrict the number of sprite definitions to 128. If more are needed, up to 512 maximum, then bank 1 or 3 must be used. By using Bank 0, you will either have to leave the top 16K of the bottom of Bank 0 free to prevent your sprite data. If you move the screen, then the eight sprite pointers will also move, and if you don't use the default character set then new must be provided. The answer to your question, then, is to **POKE** the sprite pointer bytes with the location in memory of the data to be used. This can be done within a program, for instance **POKE** #8000 for sprite 0 location. If the data stored at 2000 is 255, then the location of the sprite data is at 2000+80 = 2080 if using bank 0.

By **POKING** 2080 with 100, then new data can be accessed at 1000+80 = 1080. So your program will **POKE** in the new locations as required, and then you can use many sets of eight sprites.

Practical advice

I RECENTLY bought a spreadsheet program, Practical 84 disk version.

Unfortunately, I just can't get it to work with the Smith Corona TP1 printer. I spent hours trying the different page values, but to no avail. Can you help?

Allison Part
Wycombe Well
Oxford

IF PRACTICOMP cannot help, I suggest you try Discos Trading Co of Dovedale House, 31 High Street, Dovedale, Macclesfield, who distribute the TP1 printer.

Out of memory

I HAVE WRITTEN a program approximately 17K long, and saved it successfully. But after running the program for about five minutes I get OUT OF MEMORY errors on various lines. Can you give any assistance?

J M Wright
Croydon

IT IS NOT so much the size of the original program that matters, as the ramsize size. It seems as though a large number of variables, strings and arrays are being created within the program as run. Check the amount of memory remaining after getting the OUT OF MEMORY error using the **MEMINFO** command described in previous issues, and you will find a rather small amount of memory available. Large arrays, strings and variables use up a great deal of memory, and the remedy is to cut the number of arrays, possibly reducing the number of players in your game. Do you need to keep all the data throughout the game? If not, then reuse the arrays for later data.

Epson options

I AM THINKING of buying a printer which has to meet certain requirements. The print speed would have to be at least 160 cps, buffer storage, two monitors, 16 cps and up to 12 inch paper, tracex and fractions font, capable of printing one hi-res drawings and able to rotate backwards and forwards by a knot in the side. Can you give me some ideas, what sort of price I would have to pay,

and suitable interfaces?

Andrew Whitehead
Borough Green
Kent

I SHOULD RECOMMEND the Epson FX-80 as being closest to your requirements. Optional interfaces are RS232-C and IEEE 488, amongst others, and the standard is the Centronics style 8 bit parallel interface. Print speed is 160 cps, with 2K buffer and binary capability. See the printer demonstrated with the software you wish to use before you buy so that you can be certain of compatibility with your programs.

Assembling the Vic

I HAVE HAD a Vic-20 for a few years and wonder if you can give me any advice on books teaching assembly language, with an assembler and disassembler included in the package.

Paul Newman
Cochrane
Essex

TRY **Assemblers Assembly Language Programming for the Vic** by P. Holmes in the **Micro Works series** from Honeywell, Standard House, Bell Place, High Street, Buntingford, London, Hertfordshire, LU3 1LS. Price is £15 including a cassette which contains an assembler program. The microtapes used are standard, but should prove useful.

Many free assembler and disassembler programs can be obtained by joining KCPUG, for instance Vic Microtron, a public domain program.

Anagram of Gemini

I RUN A SMALL small business as well as living property. I have a db with disk drives and printer, and need a good user-friendly accounting package with a good manual, which could work on a daily/monthly/monthly basis and point accounts. Is sufficient detail to pass muster for VAT and IRS. It would not be necessary for the program to link with DOScript and Superbase but

it would be a bonus. Christopher Wright
Lytham

THE GEMINI'S cash book/VAT/IRS accounts program, an Anagram, which includes sales, purchases and account ledger. Make me believe you say that the software fulfills all your accounting requirements. Contact us at Unit 21, Diana Way Trading Estate, Davon, Exmouth, EX8 2HS. Tel: 0395-362162. Anagram at 6A, Queen Street, Shirehampton, Bristol, BS10 5QH.

Clearing sprites

MANY TIMES I have been writing programs on my 84 and found that I'm unable to clear sprites from the screen. Can you explain how to do this?

Alonso Hunter
Chelmsford St. Giles
Buckinghamshire

USE **THE** following to turn sprite "N" on and off.
POKE\$N\$,\$POKE\$N\$
OR\$N\$ to turn on sprite number "N".
POKE\$N\$,\$POKE\$N\$
AND\$N\$,\$POKE\$N\$ to turn off sprite.

Cobol questions

I HAVE a Commodore 64 and a 1541 disk drive. Is it possible to get the language COBOL to run on it?

Could you also tell me in what order I should switch on my computer and disk drive; the manual says the computer should be switched on last, while INPUT manager says it should be switched on first.

F G Brown
Brayley

YOU'LL need the CP/M cartridge from Commodore to run COBOL, and it's not yet available. The manual is right, computer last.

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1541 Disk Management

See the Appendix B. A detailed description of the methods used in this study is provided in the previous paper.

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CHURTON Laserdisc cartridge for Commodore 64, Littlefield, 1985. For Macintosh 1986/1987 see *Commodore*.

CHURTON 64. A new, slightly different cartridge for Commodore 64, based now on S. Martin, 1988. South Dakota, Livingston.

A VINTAGE YEAR
FOR
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back issues of *Commodore Horizons* are available. If you only joined at point-way through the year air mail them to me or have them I post opportunities to catch up on me. This is a great opportunity.

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Winners receive a copy of *PC Beyond* magazine, the **BYOND** software package, and a **BYOND** T-shirt. **Runners-up** receive a copy of *PC Beyond* magazine.

BRIAN MOORE Micro-Claw has developed a computer-controlled train layout, consisting of track, four carriages, an engine, and a device for decoupling carriages. They couple together on contact with another carriage or with the rear end of the engine. The engine is shown in the centre of the diagram, directly over the decoupling device. The event is being exhibited at the local Robotex Show, and visitors are invited to program the train so that it picks up all four carriages and pulls them around the track in the order shown in diagram B. What is the **SMALLEST** number of moves the decoupling device must be used to achieve this?

If you solve this problem you could win a **BYOND** software package. **TWENTY** winners will receive copies of *PC Beyond* for the 386.

TWENTY runners-up will receive copies of *PC Beyond* for the 386, in which you control the Beagle 2 megacomputer, coping with alien attacks, supply problems and subservience in a compact moon base. **EVERY** entrant will receive free membership of the **BYOND CLUB**, and a voucher for £1 off the **BYOND** game of their choice with the new edition of the **Beyond Club Newsletter** (published April/May 85).

So... solve the problem, and write the number on a **POST CARD** with your name and address. Don't forget to complete the tie-breaker in an apt, original and amusing manner in 15 words or less. Beyond promises a step further up because...

Send your entry to Beyond Competition, Commander Horizons, 32/33 Little Newgate Street, London EC2C, to arrive by the last day of January. Results will be announced in our March issue. Normal competition rules apply.

The winners of the November Design Master competition are S. Hartley of Stockton-on-Tees; R. Stach of Gloucester; S. Barker of Chelmsford; H. Bean of Gainsborough; B. Pitt of London; S. McCarthy of Newcastle; C. May of Banbury; R. Cheng of Chertsey; W. Austin of Newcastle; A. Crofton of Purfleet; J. Nicholson of Tonbridge; A. Lowe of Wigton; M. Gornall of Edinburgh; M. Henbury of Ardsley; N. Maitlis of London; S. Bhagat of London; S. Costa of Bradley; C. Whisstock of Sevenoaks; C. Reuben of London; and M. Jenkins of London. Each will receive copies of the Creative Sparks game **Double Trouble** and the **Black Forest** cassette.



From above

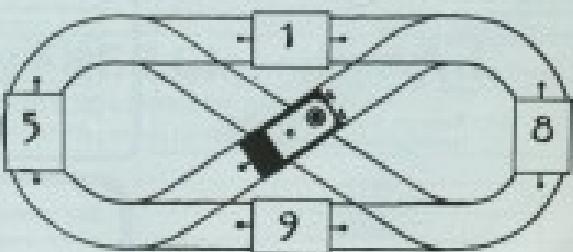


Diagram A





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MR. WIZ

From the author of Pesty Penguin, Mr. Wiz is a superb arcade-type multi-screen game. Guide Mr. Wiz around the garden to eat the cherries whilst avoiding the evil goblins. The goblin can be killed by dropping apples on them or by throwing the crystal ball. Extra points can be gained by eating the magic mushroom, but beware... this is the home of the goblin and makes them permanently furious!

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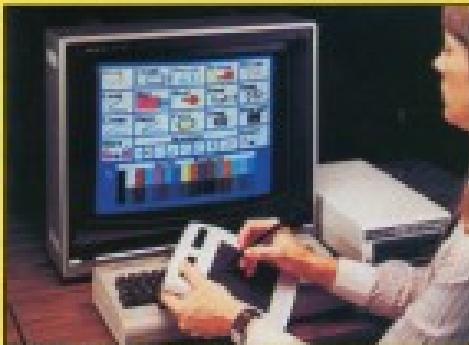


OUR BONUSES

- 1. All bonuses are available for new software.
- 2. All bonuses are also paid on software previously bought during 1985.
- 3. Extra bonuses are given for any software that is used to assist you in writing or creating your own software.

KoalaPad TouchTablet

JUST PICTURE IT!



JUST PICTURE IT - BEING ABLE TO DRAW YOUR OWN HIGH RESOLUTION GRAPHIC DESIGNS ON YOUR COMPUTER SCREEN WITHOUT HAVING TO WRITE A PROGRAM . . . /

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The Koala Pad TouchTablet provides the direct link between you and your screen! Using this pad with Commodore 64 and 1600 you can draw directly onto the screen with a selection of brush sizes and a choice of 16 colours and 16 shades from over 2000 palette patterns.

But that's just the beginning - because every Koala Pad package includes the innovative Koala Painter software which makes it easier to play with . . .

- Fill windows with a pattern
- Draw straight lines
- Write names
- Draw circles
- Plot points from a point
- Move objects around
- Copy shapes
- Create original images
- Zoom in on areas
- Change shapes between pen, painter and base your pictures to disk or tape!

The program is controlled entirely from the tablet by moving a cursor arrow around its different functions. An optional programme editor is also provided to let you build incorporated Koala Pad pictures into your own programs.

Now you don't have to be an experienced programmer to produce remarkable results on your computer - the Koala Pad from Audiogenic makes it as easy as a pencil and paper! Just picture it . . .

Available with Cassette or Disk software for the Commodore 64

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